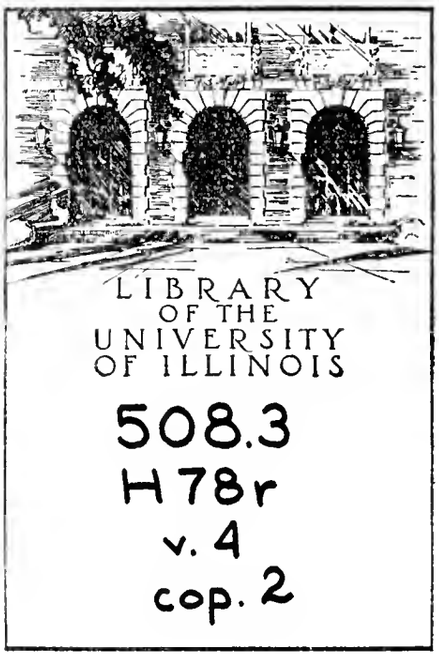

PART IV.—ANTHROPOLOGY.

REPORT ON THE WORK

OF THE

HORN SCIENTIFIC EXPEDITION

TO

CENTRAL AUSTRALIA.

PART IV.—ANTHROPOLOGY.

EDITED BY

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PART IV.—ANTHROPOLOGY.

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ANTHROPOLOGY.

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Introduction.

It is only those who have made the attempt to investigate the modes of thought and mainsprings of action of the lower races of mankind that can fully appreciate the difficulties of the task. And nowhere, perhaps, are the difficulties greater than amongst the Australian aborigines. Ignorant of their language and with but brief opportunities of intercourse, the ordinary traveller, at least, has, in the course of his enquiries, to encounter the further obstacles raised by the sentiments of fear and distrust or the desire to please at any sacrifice of truth; or it may happen, even to those who enjoy their confidence and who are versed in their ways, that a real lack of comprehension of the meaning of strange terms, and of the drift of unusual questions underlies their failure to give information. With but few exceptions, those men, now rapidly disappearing from our midst, who alone were in a position to overcome difficulties such as these, have not spoken out of the fulness of the personal knowledge and experience which was theirs. I allude to those early pioneers and settlers who for years lived in close association with the natives at a time when their customs were still uninfluenced by general contact with the Europeans; who, knowing their language, listening to their talk around the camp fire, often enjoying their complete confidence and witnessing their

unmodified ceremonies, might have preserved for us an invaluable record of their inner life and of the motives of their strange customs and superstitions.

Lacking the immense advantages, for investigation, of this intimate and continuous association of the early settlers with the natives, the inquirer of more recent times, though possibly better trained in the methods of observation, experiences to the full the disadvantages that have been mentioned even if he should escape actual hostilities in remoter parts. Moreover in Central Australia, particularly, the urgent necessity for rapid movements, on account of the all-important question of water supplies, not unfrequently precludes a sufficiently long stay in certain localities to allow of the growth of that mutual confidence which must precede all attempts to extract reliable information.

Thus ethnological science in Australia has fared badly. Those who might have spoken have remained silent, while, too often, the trained observer has lacked the opportunities for observations. To no country is the remark of a distinguished traveller more appropriate than to Australia—that "as a rule the men who know don't write, and the men who write don't know," and, if it must be admitted also, that ethnological investigations have been too little considered as part of the functions of an exploring party in Australia it must also be admitted that the difficulties in the way of these, as of other biological investigations, are very great on such flying expeditions. With the necessity of frequently covering long distances, by forced marches in waterless tracts, the quest for water supplies from sources either of unknown or of doubtful permanency being the first and paramount consideration; with the difficulties of transport of food in regions where no indigenous supplies exist, to say nothing of the carriage of collecting material and materials collected, the representatives of the various branches of natural history have often little scope for their efforts or the observer little time for deliberate and systematic observations when a detention might imperil the safety of the whole party. Though it is true that some of these difficulties have been minimised in recent years by the use of camels, enough still remain to form substantial obstacles to scientific exploration in Central Australia.

If these are the kinds of difficulties which must meet the first explorer of unknown regions they become merely those of another kind as the spread of settlement proceeds. For the older order quickly changes. Rites, ceremonies, customs, traditions soon become modified, obsolete, or their significance wholly lost, and thus a real ignorance of the subject on which the natives are questioned is added to the difficulty of making the meaning understood of the questions themselves.

The vices and diseases of Europeans have already borne their evil fruit, and the native population, never a large one, has diminished with painful rapidity; whole tribes even have vanished from the scene. The very kindliness of the whites which prompts them to supply clothing and habitation is disastrous to the constitutions of those whose restless and wandering habits lead them to alternate conditions of nakedness, exposure and semi-starvation with those of warmth, shelter and good food. Through the heart of the continent from Adelaide to Port Darwin the telegraph line, in its construction and maintenance, has made the presence of the white man a familiar feature over a large area. East and west of it, for a considerable distance and for some years, the country has been occupied for pastoral pursuits, while exploring parties have intersected much of the remainder in various directions. Conspicuous blanks upon the map, it is true, show that large tracts of unexplored territory still exist to the west of the telegraph line, but, whatever the meridian traversed in that direction, explorers have told us the same tale of an almost waterless region sparsely inhabited by nomad groups of aboriginals of the same general type as those of other parts of Central Australia. So that, judging from the actual facts in our possession as well as from what might be expected from the uniformity of the physical features of the country, so far as it is known, it is not to be expected that any startling ethnological novelties remain to be revealed by further knowledge of the tracts which still remain unexplored. Indeed the homogeneity of type which is characteristic of the whole Australian race is nowhere more conspicuous than in the immense central regions of the Continent. But, although a good deal of information has been collected concerning the tribes nearer to the seaboard, very little has been written of the natives of this central region.

Though the present paper is chiefly based upon the experience derived from the work of the Horn Expedition, I have been able to utilise a certain amount of information gained during a previous journey from Port Darwin to Adelaide in 1891, in company with the Earl of Kintore, then Governor of South Australia, our route on that occasion traversing a part of the same regions as were visited by the later expedition. I have also derived much assistance from my association, as Director, with the South Australian Museum, which institution possesses a very fine ethnological collection from Central Australia, many of its specimens, indeed, having been gathered in the regions visited by the Horn Expedition and in those adjacent.

It will be recognised that, under circumstances of travel where, in addition to other difficulties, limitations of time impose restrictions on the scope of inquiries,

deficiences in the record are inevitable. So, also, there arise questions in which, in the absence of personal experience, reliance has to be placed on the statements of others. I trust, from the infrequency with which I have thought it necessary to cast doubt upon information so derived, that it may be assumed that it emanates from sources believed to be thoroughly reliable; the names, indeed, of several of my informants constitute the best guarantee for the kind of knowledge that comes from long personal experience of the natives and their ways.

In this respect I am particularly fortunate in being able to supplement my own observations, just in those matters in which they are most deficient, by the notes of a most intelligent inquirer and accurate observer, Mr. F. J. Gillen, Sub-protector of Aborigines and Special Magistrate at Alice Springs in the McDonnell Ranges. This gentlemen, from his long acquaintance and sympathetic dealings with the natives, has had opportunities of witnessing ceremonies and gaining information concerning them that have fallen to the lot of few white men. Mr. Gillen's paper with its interesting series of illustrations, from his own camera, forms a most valuable contribution to the ethnology of Central Australia; moreover, I have to express my gratitude to him for much valuable information and assistance in my own work and particularly for the generous use he has permitted me to make of his photographic skill. To Professor Spencer I owe a similar acknowledgment for artistic and other services freely rendered. Indeed, I recognise that whatever value and interest may attach to this paper are greatly enhanced by the illustrations which accompany it.

In several instances Mr. Gillen's and my own account will be found to overlap, but as that gentleman has entrusted me with the editing of his paper I am anxious that it should appear as nearly as possible in its original form. As a set-off against such overlapping may be placed the advantage accruing from the confirmatory evidence of two independent reports. In most respects, however, Mr. Gillen and I deal with the subject from different points of view, and our papers are largely supplementary of one another. Some discrepancies in native names that occur in the two reports arise either from the occurrence of actual variations in the same tribe or, more frequently perhaps, from the fact that while Mr. Gillen's report refers to one tribe only, my own deals with this as well as another, and it has not always been possible to discriminate between the two languages.

In all essential particulars the natives of Central Australia conform to the well-known type of the Australian race. Those features, either of person or custom, which distinguish them in a subordinate degree from the tribes nearer the coast

are, with but little variation, found extending over the immense area of the central regions of the inappropriately named province of South Australia. We may take these regions to extend from the terminus of the northern railway system at Oodnadatta in the south, to the Daly Waters telegraph station in the north, or roughly speaking, from the 28th to the 16th parallel of south latitude. Ethnologically speaking, the region might be extended even still further to the south. What little has been written of the natives of the interior of Western Australia, no less than the uniformity of the physical, botanical and faunistic features of this region—so far as they have been made known by the various exploring parties that have traversed the westerly half of the continent—justify the belief that the same anthropological characteristics extend over most, if not all, of the inland regions of Western Australia. Still less is known ethnologically of the area which lies to the east of the telegraph line between it and the Queensland border but, if a judgment may be based on the character of the native handiwork, these regions, also, must be included in the large homogeneous group which thus practically occupies the whole of the interior of South Australia, of Western Australia and, probably, of the westerly regions of Queensland.

The general impression of Central Australia is that of a desert country, but the term is a misnomer, if by it we are to understand a region destitute of animal and vegetable life. Extreme monotony of soil and scenery there is no doubt, but the gatherings of the zoologist and botanist of the Horn Expedition, even in the most uncompromising regions, afford evidence of a considerable variety of plants and of the humbler forms of animal life; and, in the valleys of the McDonnell Ranges and of its outliers standing in the very heart of the continent, we have, despite a capricious rainfall, a country which, for Australia, is well watered, which, after rain, may even be well grassed and which holds a fair amount of indigenous game. There is no doubt but that in the prolonged droughts, to which a great part of the inland regions of Australia are unfortunately periodically subject, there are times when the waters dry up and vegetation withers, leading to a corresponding diminution of the native food supply. With the improvident habits of the natives such seasons must, of necessity, be for them times of want, but of the permanent effects of mal-nutrition in the districts visited we saw very little sign. It must be stated, however, that the journey of the Horn Expedition followed a season of unusually heavy rainfall, when the country was seen under exceptionally favourable circumstances. Moreover, with the exception of an excursion of a section of the party to Ayers Rock and Mount Olga, the Expedition did not extend into the drier and more barren regions that lie towards the Western Australian boundary and beyond where the conditions are more unfavourable. The general

aspect and physique of nearly all the natives met with indicated, in fact, good nutrition. Of fair, and, in many instances, of superior stature, their muscular systems were not ill developed, and not infrequently really fine figures, both of men and women, might be observed. In the women, however, grace of form is very early lost, and some of the old females were veritable hags. Occasionally a tendency to adiposity, rare amongst the race, was noticeable.

It must be remembered, however, that since the advent of the settler there has been a tendency of the natives to congregate in the neighbourhood of the pastoral stations, where their natural food supply is materially, if intermittently, augmented by the refuse of the slaughter-yard, or even by gifts of entire beasts. While at Tempe Downs I was witness of the sequence of such a donation which is there of frequent occurrence, but it formed an uninviting spectacle which need not be described here. Everything possible is eaten, even to the skin, intestines and marrow, after more or less baking in the ashes.

In the more outlying stations, particularly in those largely consisting of hilly country, the natives have for some time and to his great loss, liberally helped themselves to the squatter's herd. Mr. R. F. Thornton, the owner of Tempe Downs, informed me that, in the neighbourhood of Gill's Range, they were for some time killing cattle at the rate of 100 a month, a loss which no station could long endure. The *modus operandi* is for one party of natives to drive a small detachment of the herd into the bed of one of the deeply-cut rocky gorges which are numerous in the ranges, and to which the cattle may be in the habit of repairing for water in the springs or rock-holes. Another party lies in wait higher up the gorge or on the rocks above and either spears the cattle or disables them by rolling down rocks. They cut up the beasts in portions, carry them off to conveniently retired and often very inaccessible spots, eat to repletion and then move on again next day. What with the rapidity of their movements and the natural difficulties of a very rocky and hilly region, these raiding parties are very difficult to catch, and when they are caught it is only by following them up incessantly by the aid of black trackers and by giving them no rest. It is not the actual destruction of stock alone which constitutes the damage done, but the terrorising influence of these repeated assaults on the herd is so great that, on some of the best portions of the Tempe Downs Run, no stock could be kept, the mere scent of a black being sufficient to produce a panic. With such continued harrying of the herd the beasts soon fall off in condition and become unfit for market. So great indeed was the harm that was being done that a police camp, with two experienced mounted troopers and a band of black trackers, was established at Illamurta on the Ilpilla Creek, the result

being a very material diminution of cattle killing. Several of the worst offenders were caught and sent to the Port Augusta gaol for a term, but the general complaint in the district was that the sentences to which they were committed were far too short to serve as a deterrent. The malefactors speedily make their way back to their old haunts and resume their old wiles with the addition of such others as they have learned during their residence in gaol. Several, I might say nearly all, of our local guides, that we picked up as we proceeded, had been through this experience, and the exhibition to them by any of ourselves of the gesture sign for cattle was accepted as a sort of personal joke, which was always greeted by themselves and their comrades with great and appreciative laughter. Notwithstanding, however, their partiality for animal food we saw large numbers of natives living almost entirely on vegetable products, and from all appearance thriving on them.

In respect of our ethnological investigations, it was, perhaps, unfortunate that our journey was made in so good a season. Soakages and water-holes were numerous, even in districts where, as a rule, scarcely any permanent water exists, and thus secure, in almost any direction, of this necessary element and of abundant food, the natives were scattered over a wide area in small groups, which were hard to meet with owing to their natural timidity at the approach of our large party. Nevertheless, their presence in our immediate neighbourhood was often evident by the smoke of their camp fires, or of burning porcupine grass (*Triodia*). For these reasons it happened that the numbers of blacks congregated around the stations, from whom our observations were made, was smaller than it would have been in a less favourable season. We were also not fortunate enough to meet with one of their large periodic gatherings at some favourite locality, for ceremonial purposes.

Both at Tempe Downs and at the Hermannsburg Mission Station on the Finke River there had previously been assemblages of two or three hundred with such objects in view, but these had at the time of our visit, dwindled down to barely a quarter of that number, and it is precisely those who are in the habit of hanging on to the outskirts of civilisation and well on in the way of abandoning their old customs, that form the least desirable subjects for observation.

Much has been said concerning the harsh treatment to which the blacks have been subjected by the early settlers in Australia. Central Australia has not been wholly free from those instances of wanton and unnecessary destruction of defenceless natives that have excited righteous indignation. There have been the same old

stories of interference with the lubras*—*teterrima belli causa*—consequent reprisals and excessive and indiscriminate revenge, but such instances have not been so numerous as they have in some other parts of the continent, and I am glad to bear witness to the humanity and even kindliness with which the natives are now treated by the present settlers.

In spite of great provocation at Tempe Downs the owner has under great temptation and even peril of his life persistently refused to fire on the marauders even when taken *flagrante delicto.* It is quite true that such forbearance has been deemed injurious to the interests of the district, and not always imitated either in the past or present, but still on the whole the natives are well and kindly treated.

At Alice Springs, another favourite gathering ground, they have in Mr. Gillen, the Sub-protector of Aborigines, a man who is not only kindly disposed towards them, but who, also, from his long residence and intimate knowledge of their ways, has acquired a position amongst them of entire trust and confidence.

Reference will be made elsewhere to the labours of the German Lutheran Missionaries at Hermannsburg.

Territorial Distribution.

[*For the system of Orthography for native names adopted in this paper see Appendix I.*]

Simple as the matter appears it was not without much difficulty and repeated questioning that information could be elicited concerning the territorial distribution of the tribes of Central Australia. The natives with whom we came in contact do not habitually speak of individuals as belonging to such and such a tribe, specifically named and having defined territorial limits, but they designate them by the name of the direction in which their country lies. Thus among the Arunta tribe—that which will be principally dealt with in this paper

* It is perhaps hardly necessary to explain that the term Lubra, used by the whites in South Australia and Victoria, and generally understood by the blacks of those regions signifies wife or woman. Gin, sometimes written Jin, has the same significance north of the Murray River. Professor Morris, of the Melbourne University, who has lately been prosecuting inquiries on the subject of "Australian English," informs me that both words are of Australasian origin. From the same gentleman I have it that the term Wurley, applied by the white of South Australia to native shelters of boughs and other materials, is probably derived from Oorla, a word of the dialect of the natives of the south-east of South Australia, which means a house, a camp, a bird's nest. It was spelt Wurley as early as 1862. In the eastern colonies the equivalent term is Mia-mia, sometimes written and nearly always pronounced as Mi-mi (vowel sound like that of "y" in my). Some of the results of Professor Morris's inquiries are embodied in an interesting lecture reported in the Melbourne *Argus* of 28th December, 1895.

and entirely so in Mr. Gillen's—the natives to the north are referred to as Aldoliña, those to the south as Urlewaga or Urlewa, to the west Andigariña, and to the east Aiyerara or Iyerara. Consequently, we were for some time under the impression that these names were those of different tribes and, indeed, some of them appear in various communications as tribal names, whereas, in fact, the natives so referred to are not necessarily members of the same tribe. Occasionally they attach the name of some important geographical feature, and it was not uncommon to hear a man of the Arunta tribe spoken of as a Larapinta (Finke River) blackfellow.

It will be observed that in some instances throughout this paper I have been obliged to give alternative spellings for the native names. This arises not so much from the difficulty of expressing accurately native sounds in English letters, although that is not always easy, but rather from the fact that variations in the pronunciation of words, either of local origin or arising from imperfect orthoepy, do actually occur. For instance the name of the tribe just referred to was, in the southerly and westerly regions, often pronounced as if spelt Arunda There is moreover a noticeable tendency to clip a terminal syllable as, for example, in the general use of Urlewa for Urlewaga (south), and again in the pronunciation of the name of the Luritcha tribe it was sometimes very difficult to say whether the terminal short vowel sound should be expressed by "a" or "i" or omitted altogether, or whether the letter "I" should precede the initial "L." So also the native name for the mole-like marsupial (*Notoryctes typhlops*) which was often on our lips was variously spoken of as Urquámata, Urkámata or Urkáamata, and many other examples might be quoted.

In the large area of country traversed by the Expedition natives belonging to two tribes only were met with—the Arunta or Arunda, of which our principal "black boy," a tracker of mature years in the service of the police at Oodnadatta, usually spoke as the Lurna Arunda and the Luritcha or Luritchi. The former occupies the tract of country traversed by the telegraph line stretching from Oodnadatta, or, more strictly speaking, from the Macumba Creek in the south through Dalhousie Springs, Charlotte Waters, Crown Point, Mount Burrell and Owen Springs to Alice Springs in the McDonnell Ranges.

Westward of the telegraph line the Arunta tribe occupies the main valley of the Finke River, and extends as far as the Mission Station at Hermannsburg and possibly further. How far the boundary extends to the eastward of the telegraph line I am unable to say, but Mr. Gillen informs me that the Arunta-Ilpma – the section of the Arunta tribe belonging to the Alice Springs district—extends to

Hart's Range, or about 100 miles in a direction a little north of east. North of Alice Springs this section extends about seventy miles. Probably the Lurna Arunda of our black-boy represents another section of the same tribe, although I could get no definition of its limits or of the specific names of any other sections beyond those mentioned.

All the blacks of this widely extended tribe speak practically the same language, the few variations, often slight but sometimes amounting to actual differences, which exist in various localities, being readily understood elsewhere.

Mr. David Lindsay* reports that the natives on the Plenty and Marshall Rivers still further to the eastward, and as far as Lake Nash Station, on the Herbert, have the same customs and class divisions, and a language nearly identical with that of the Arunta. Further north along his track which lies over what is known as the Downs country tribes speaking a wholly different language were met with.

The territory of the Luritchas marches on the western boundary of the Aruntas, and comprises the country about Erldunda, Tempe Downs, Gill's Range, Mercenie Bluff and Glen Helen, and extends certainly as far westward as Ayers Rock and Mount Olga, which latter was the most westerly point reached by the Expedition; probably it stretches still further to the westward.

According to Mr. Gillen the Luritcha language extends southwards as far as Port Augusta West, and northwards to a point at least 100 miles to the north of Glen Helen, where the country in which it is spoken approaches to within about fifty miles of the telegraph line. It differs entirely from that of their neighbours the Aruntas. For the most part the members of each are entirely ignorant of one another's language, and in our experience the only spoken communication between them was carried on by means of the limited stock of English at their command. On the other hand the manual signs of the gesture language, despite certain variations, seemed to be readily understood between these two tribes.

Physically speaking there is nothing, so far as I could observe or learn, to distinguish the members of these two tribes from one another. They practice the same rites, observe the same kind of ceremonies, have similar body scars, use the same weapons, utensils and ceremonial articles. The only feature I could perceive which distinguished the Luritcha men was a peculiar method of doing up the back hair. This was tied up behind in a kind of chignon, on which was seated, saddle-

* An Expedition across Australia, from South to North, in 1885-6, by David Lindsay.

fashion, a concave pad of emu feathers; this again being surmounted by a fan-like plume of emu or other feathers laid flat upon it. The whole appendage was firmly fixed by bone hairpins and a long strand of fur-string. This head-dress I did not observe amongst the Aruntas.

Glen Helen, Tempe Downs and the Mission Station are meeting grounds for the members of both these tribes, and a certain amount of intermingling between them appears to have taken place. At each of these places there were at the time of our visits a number of both present who seemed to be living together in harmony, but in the absence of the head-dress referred to, we were of ourselves usually quite unable to distinguish between them.* By far the greater part of our time was spent in the country of the Arunta, by whom English is much better spoken than by the Luritchas; indeed, nearly all of these neither spoke nor understood English at all, and certainly in no instance was their English vocabulary extensive enough to be a satisfactory or even feasible means of communication.

These circumstances and the fact that the "black boy" who accompanied us belonged to the Arunta tribe made us much more familar with these than with the Luritchas. Thus, it must be understood that most of the information gained and recorded here has reference to the former. In many respects, however, the same is undoubtedly applicable to the Luritcha tribe, though I shall be careful to indicate, where possible, those details which are derived from the latter source. Mr. Gillen's paper also refers to the Arunta tribe, and particularly to that section of it known as the Arunta Ilpma. Thus it happens to my great regret that one of the chief deficiencies in this paper is the very meagre nature of the information derived from the Luritcha tribe, which, from its greater freedom from the influences of civilisation, offers a better field for the ethnologist than their neighbours the Aruntas.

So little has been written of the Central Australian tribes that, though, perhaps, not coming strictly within the limits of the ethnology of the Horn Expedition, it may be desirable in this place to record what information I have gathered (chiefly from Mr. Gillen) concerning the distribution of neighbouring tribes to the north of the McDonnell Ranges.

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* Mr. Horn, whose experience of the natives of the west coast of the Port Lincoln Peninsula dates from 1862, that is before they had come in contact with the whites, informs me that this kind of head-dress was worn in those early days as far south as the Gawler Ranges. Professor Spencer also states that he is nearly sure he saw it worn by some members of a westerly section of the Arunta tribe, so that as a distinguishing feature it is perhaps unsafe to attach too much value to its presence.

Seventy miles north of Alice Springs the Arunta territory meets that of the Chitchika who occupy the country about Anna's Reservoir, the Woodforde Creek and Central Mount Stuart. Their language differs slightly from that of the Arunta, but spoken conversation can be carried on, and the two tribes are on visiting terms.

At Central Mount Stuart the Chitchika march on the Kaitish who inhabit the strip of country lying between Mount Stuart and the Wickliffe Creek to the north. The Kaitish language differs from that of the Aruntas though there are some words in common.

To the west of Mount Stuart and along the western boundary of the Kaitish are the Wolperis, who extend northwards as far as the parallel of Tennants Creek Telegraph Station and possibly further, though their territory does not reach the overland line.

The Dixon Creek is the southern limit of the Warramungas, a tall, active, warlike and ill-favoured tribe, which extends northwards as far as Renner's Springs. It was at Attack Creek, which lies between these limits, that this tribe checked Stuart's progress in 1860. They speak a language different from any of the preceding. These three tribes, the Kaitish, Wolperis and Warramungas occasionally foregather on the Dixon.

North of the Warramungas is the Chingala or Chingali tribe, of which Newcastle Waters occupies a central position. Their territory extends southwards to Powell's Creek Telegraph Station, northwards to Daly Waters, eastwards about one hundred miles, and westwards about seventy miles. North of them are the Wombai.

Eastwards of the Wickliffe are the Ilyowera, who run northwards and are bounded on the east by the Waagai, a powerful tribe, whose limits are not known. They occasionally make raids upon the Warramungas, and it was they who, a few years ago, attacked the Frew River Station.

Immediately to the south of the Aruntas is a group of tribes around Lake Eyre, the distribution of which is delineated by Mr. Howitt in a map which forms the frontispiece to Vol. XX. of the Journal of the Anthropological Institute. Of these the most important is the Dieyerie, or as Mr. Howitt writes it the Dieri

tribe, which occupy the country traversed by the water-course of the Barcoo or Cooper.*

Native Population.

The nomadic habits of the natives, the comparatively large area so sparsely settled that no regular oversight can be maintained, the wide extent of the still unexplored territory, and the unfriendly, if not actually hostile, character of the tribes in some parts, make it difficult to give an estimate of their numbers in Central Australia even with approximate accuracy.

Taking the whole of Central South Australia which, for statistical purposes, we will consider to extend from the southern boundary of the Northern Territory of South Australia in latitude 26° S., to a line drawn from east to west along the 17th parallel or a little south of Daly Waters Telegraph Station in the north, the last census of 1891 shows a total native population for the included area of 2457, a very small number when compared with the immense extent of country comprised within the above limits. This estimate is no doubt reliable in the sense that, at least, this number of natives did actually exist at that time for, so far, the returns are the result of actual enumeration.

There were, however, no doubt many others in addition belonging to outlying regions, either unexplored or at least not frequently visited, which escaped enumeration, but the number of these, within the limits just stated, is probably not relatively great, as the whereabouts and numbers of any large body of natives are generally pretty well-known; there has been also an increasing tendency in recent years for the natives to congregate in the neighbourhood of settlement, where they can be observed.

For this region, then, the census estimate may be regarded as probably not greatly under the mark. It is otherwise when the returns from the territory north of latitude 17° is considered, for the census subdivisions included in this comprise the more populous tribes about the western and south-western shores of the Gulf of Carpentaria and along the Victoria and Fitzmaurice Rivers, in both of which

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* In the course of this paper I shall more than once refer to the tribe of the country now occupied by the Peake Station. Mr. Kempe, who has for many years been manager of that station, which lies to the west of Lake Eyre, informs me that the name of this tribe is Arrabunna. This does not accord with Mr. Howitt's map which places the Urapūna (doubtless the same tribe), to the north of the Lake and beyond the Peake country. As I can hardly believe that my informant, who is an intelligent observer, can have been mistaken in the name of the tribe at his doors, I shall use the name he supplies. It is, however, an exceedingly difficult matter to define tribal boundaries, especially where intermingling has taken place.

districts the natives are unfriendly, not to say actively hostile, and any estimates of their numbers are little better than guess work. For what it is worth, however, I may state the census estimate for the subdivision lying between latitude 17° and 13°58, of which the best that can be said is that it is based partly upon information derived from station managers, was 7600.

Of the total native population (2457) estimated as coming, approximately, within the limits assigned in this paper to Central South Australia, 872 belong to the Alice Springs district which includes the McDonnell Ranges and their outliers, and 180 to that of Charlotte Waters lying immediately to the south of the former. The sum of these figures comprise the majority but, by no means, all of both the Arunta and Luritcha tribes, the deficiency of unenumerated natives being probably much greater in the case of the latter tribe on account of its greater remoteness from settlements.

Physical and Personal Features.

As has already been stated the natives of Central Australia form a homogenous group of the well recognised Australian type, the particulars of which need not here be specified.

The most marked feature in their personal appearance, which cannot fail to strike the observer, is the decidedly Jewish aspect of many of the adult males. This is certainly due in great measure to the pronounced character of the curve of the nose, but the effect of that feature is certainly added to by the extensive forehead displayed and long full beard—a combination of characters which suggests a patriarchal appearance. The former feature is produced by depilation at some period after the initiation ceremonies, and by pressing back the remainder of the hair by a band or by one or more head-rings of native string. We noticed these features constantly throughout the Horn Expedition, and on a previous journey I observed them as far north as Tennant's Creek, nearly 350 miles north of the McDonnell Ranges. Photographs taken on the Elder Exploring Expedition, far to the westward, show similar features, and other travellers have called attention to the same Jewish aspect.

The mean height of thirteen male adults at Crown Point, which is chiefly plain country, was 5ft. $5\frac{1}{2}$in.; of an equal number at Tempe Downs, 5ft. $6\frac{1}{3}$in.; and of the same number at Alice Springs, 5ft. $5\frac{2}{3}$in., the two latter places being situated in the midst of rocky and mountainous districts, which are also better supplied with water and game. The mean of these thirty-nine males was 5ft. $5\frac{5}{6}$in.

The mean chest measurements of the Alice Springs group was 34$\frac{1}{10}$in. The mean height of eleven adult females at the Tempe Downs was 5ft. 0$\frac{3}{4}$in. For further details as to measurements see Appendix II.

It is perhaps worth noticing when dealing with the subject of stature that I had under my care in the Adelaide Hospital a native of the Tennant's Creek tribe (Warramunga) whose height was 6ft. 4$\frac{3}{4}$in., but his build was slender and his chest development poor. He died of tuberculosis, at an early age, as so frequently happens to these natives.

Mr. David Lindsay, in the pamphlet which has been mentioned, refers to a fine race met with to the east of the telegraph line, near Anthony's Lagoon in latitude 18° S., many of them being over 6ft. in height, and one reaching 6ft. 8$\frac{1}{2}$in., and weighing 17$\frac{1}{2}$ stone. Mr. Palmer† also makes mention of a man on the Saxby River in Queensland who is said to have measured 7 feet.

As already stated their muscular systems were fairly and, in some cases, extremely well-developed and, though their lower limbs and, especially the calves, were not robust, there was a general absence of that spindle-shanked appearance of the legs that has usually been associated with the Australian type. No obvious difference in muscular development was observable between the natives of the plains and of the hilly districts. The feet are well formed, and the arch of the instep well developed. It has been stated, I believe, that primitive man habitually walks with the axes of the feet parallel; these natives, however, conspicuously turn out the toes. The hands are remarkably small and finely shaped, and in conformity thereto is the small size of the hafts of their shields, for which the hand of the average white man is much too large. The fingers are delicate and of great mobility, as shown by the ease, quickness and freedom with which they execute the various movements used in their gesture or sign language, which will be afterwards treated of. In this aspect one was reminded of the supple movements of an expert pianist. Our own efforts to adjust our fingers to the various positions assumed in these signs were slow and awkward in comparison, some positions, indeed, could not be assumed at all without assistance from the other hand.

The superior relative length of the limbs appears on reference to Appendix III., where it will be seen that the combined lengths of the segments of the arm (Humerus and Radius) and of the leg (Femur and Tibia) in the skeleton of a native from Alice Springs, believed to be about 5ft. 10in. in height, were actually

† Notes on some Australian Tribes, E. Palmer, Journal Anthrop. Inst., vol. xiii.

greater than those of the corresponding combinations in a European whose stature was known to be 6ft. 3in. And it will be seen further that it is in the fore-arm and leg segments of the limbs that the increase of length is most marked. Further osteological details will be found in the same Appendix.

As is well known, the Australian race presents, in the absence of frizziness of the hair, a striking departure from the Negroid type, to which in many respects he approximates. In no case did we observe, nor have I ever observed, the existence of this essentially negroid characteristic, which has nevertheless been mentioned as occurring in Australia.* The most that was noticed was a slight waviness.

By the men the hair is worn rather long and usually caked into thick matted rope-like coils, with a mixture of red ochre grease and accumulated dirt. Mr. Thornton, of Tempe Downs Station, related to me how that, desiring, in the interests of cleanliness, to see the natives about the station with hair worn shorter than was their custom, and not wishing to destroy the edges of his shears by cutting through such sand-impregnated locks, he induced them to submit confidingly to having these amputated with an axe and block, he being the operator. From the forehead, increased in extent by depilation, in the male adults the hair is pressed back and retained by a head-ring or by some kind of band; behind, it is tied up in a bunch with native string so as to resemble a kind of chignon. At Henbury, Tempe Downs and the Mission Station, some of the adult males had this chignon surmounted by the appendages mentioned on a previous page, and, subject to the doubt raised by a footnote to page 12, it appeared that these individuals belonged to the Luritcha tribe. Not unfrequently a tuft of the same feathers or of the eagle-hawk (*Aquila audax*) or of some other bird is worn erect in the hair or hangs over the forehead, being retained by the head-band. This decoration was most frequently seen at Tempe Downs, where the Luritcha predominate.

Amongst the women, the hair, as generally worn, barely reaches to the shoulders. It is usually less caked into coils, unless by dirt and, though a head band or ring is generally worn, the hair is not pressed back from the forehead in the same way as amongst the men; it is not tied up behind in a chignon, nor are feather plumes worn. At various localities we observed women with their locks matted into coils with gypsum or some white earth as a sign of mourning, and at Oodnadatta a man had his beard similarly treated for the same reason.

Almost in every camp, but most frequently at Tempe Downs, the hair of some of the children was, in marked contrast to the usual dark hue, of a very light

* Introduction à l'Etude des Races Humaines De Quatrefages.

tawny or almost tow colour, and wherever this colouration existed it was most marked at the tips, though, in some cases it extended to the roots. The peculiarity appeared to be quite independent of any artificial bleaching and was not of very frequent occurrence. As all natives have their heads equally exposed to the weather it is not easy to account for this exceptional feature.

In the males the pilous system of the face is particularly well-developed into a full, often flowing, beard, whiskers and moustache; one man, only, who was naturally bare on the face, was met with at Crown Point, and this feature was associated with a falsetto voice. Occasionally, but not often, a tendency to baldness was observable, and in a few instances there was an abnormal development of hair all over the body.

No instance of albinism or of a condition approaching thereto was observed throughout the journey.

Both sexes when uninfluenced by civilisation, are practically nude, though, in the groups that assemble about the stations, the women, and particularly the younger ones, cover their nakedness with miscellaneous odds and ends of garments acquired from the whites. Rarely did the females wear a small apron of native manufacture as is usual in some of the more northerly tribes.

Almost all the men, however, habitually wear a conventional covering in the form of a small fan-shaped tassel made out of fur string and not much larger than a postage stamp. This is attached to the pubic hairs and is much less efficient as a covering than the vine leaf of the sculptor. Its grotesque inadequacy as a covering, in fact, rather serves to attract the attention to the parts which it pretends to conceal. Still more does this remark apply to an oval concave piece of the body whorl of the shell of *Melo æthiopica* or less frequently of the nacreous layer of a valve of the pearl oyster *(Meleagrina margaritifera)*, which is used for a similar purpose. These articles find their way by barter from the north-west coast to tribes considerably south of the McDonnell Ranges, and, by their prominent position and by the contrast of the brilliant white against the dark skin, form an object far more conspicuous than efficient for its ostensible purpose. These coverings and the various other articles used either as clothing or ornament will be dealt with more particularly in a separate section.

The skin, the natural colour of which presents no departure from that characteristic of the Australian race, often has imparted to it a uniformly glossy dark or light red brick colouration from general inunction with a mixture of red ochre and

grease, and, independently of special ceremonies, which will be dealt with in a separate section, the face and body, are often adorned with patterns done in the same material or in yellow ochre, white clay or charcoal. A very common device is a broad band of one or other of these pigments across the bridge of the nose extending on to the cheeks.

Platycnemia. Camptocnemia.

On the journey northwards of the Horn Expedition I noticed at Crown Point a young girl of about fifteen years of age whose tibiæ, or shin bones, presented a conspicuous and symmetrical anterior curvature (Pl. 1, Fig. 1). This, as far as could be observed in the living body, was associated with a condition known as platycnemia, in which the tibiæ are much flattened as if by lateral compression and, in a living person, the former condition has the effect of giving an exaggerated idea of the latter by reason of the extreme prominence given to the anterior edge of the bones.

This girl was ill-nourished, even to emaciation, but presented no other abnormalities of bones or teeth so far as could be discovered. Subsequently, when in the McDonnell Range districts, we came into more frequent contact with the blacks, I was surprised to find that the tibiæ of a considerable number of them, both males and females, adults and young, presented the same peculiar bent conformation, the associated platycnemia being apparently also well-marked.

This latter conformation has received some attention from an ethnological point of view, having been found in the tibiæ of some of the lower races and, with varying frequency in different localities, in those of ancient man, notably in the bones of Cro-Magnon; a certain form of it is stated by Boyd Dawkins* to be not infrequent in the shin-bones of negroes.

In the South Australian aborigines platycnemia is extremely common and often well-marked, most of the skeletons that have passed through my hands manifesting the peculiarity to a greater or less extent, while, with the exception of the skeleton of a man from Alice Springs, previously referred to, few of these exhibited an amount of anterior curvature that could be considered abnormal. It should, however, be stated that in this particular skeleton, which was the only one collected, the curvature is inconsiderable in comparison with that seen in many living subjects.

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* Cave Hunting. W. Boyd Dawkins.

The left tibia of this Central Australian native is represented in the accompanying Plate, and sections are also shown of the same bone at its mid-point and at the point of junction of the upper and middle thirds. These may be compared with corresponding sections of a normal European tibia and of two of the most platycnemic tibiæ I possess. It is remarkable that these latter sections, differing so conspicuously from one another, are from bones of natives belonging to the same locality and tribe. Indeed, an examination of the form of a number of Australian tibiæ shows a remarkable degree of variation in the sections. The comparison will show that, though the curvature is considerable in the McDonnell Range tibia, the platycnemia is not nearly so well-marked as in the bones of the two other South Australian natives.

I may say, in reference to the explanation that platycnemia may be a modification of form due to the increased area for the origin of the tibialis posticus muscle, which is connected with the freedom of movement and extent of use of the muscles of the leg that might be expected to reach a maximum of development in races living in mountainous or rugged country, or in those whose existence entails the necessity of following the avocation of hunters, that all the skeletons examined by me, in which platycnemia was often extremely well-marked were, with the exception of the Alice Springs skeleton, those of natives of the plains, or, at all events, of country that could not in any sense be called mountainous.* Still the principle of the explanation is well worth consideration, for the Australian native is well known to be perpetually on the tramp, either in pursuit of game or in the course of his wandering life.

In conjunction with my colleague, Dr. Watson, Professor of Anatomy, to whose experience I appealed, I have examined a considerable number of Australian tibiæ, nearly all of them more or less platycnemic, and I find that though the area of the surface of origin of the tibialis posticus is undoubtedly increased in many, in others this is certainly not the case. In this connection of alleged increased muscular activity it may be worth mentioning that Professor Watson, while having no record of abnormalites in the tibialis posticus muscle itself, found in one aboriginal subject a very large flexor accessorius. The outer or tendinous head was wanting, but the inner (muscular) head was immense, and it ran into the flexor longus hallucis (a very strong muscle), instead of into the flexor longus digitorum.

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* Manouvrier. Sur le platycnémie, etc. Mem. Soc. d'Anthrop., Paris, 1888. I regret that I have not been able to refer to this paper, and I am indebted for a short epitome of the author's conclusions to a paper on the "Influence of posture on the form of articular surfaces of the tibia and astragalus," by A. Thomson. Journal Anat. and Phys., Vols. XXIII. and XXIV.

The anterior curvature for which I propose the name Camptocnemia, so far as I could see, was not usually associated with any pathological conditions visible in the living subject,* on the contrary the natives thus affected, with the one exception mentioned, were neither more nor less healthy and well-nourished than those in which the peculiarity was not observable.

The question is, "to what extent is this curvature to be regarded as a racial character or pathological condition?" It certainly has no resemblance to the ordinary curvature of rickets, and no other evidence of rickets, syphilis or tuberculosis could be detected in the cases that came under my notice, even in the emaciated girl referred to.

Dr. Gardner,† however, has described a case of a boy aged sixteen, a native of Aneitum, who had suffered from malaria; here both the flattening and the curvature were present and were apparently of pathological origin. In the same paper it is stated, on the authority of Dr. Paton, formerly Missionary to the New Hebrides group, that this disease of the bones which, *inter alia*, leads to swelling deformity and curvature exists in all the Southern Islands of the New Hebrides, and probably throughout the whole group.‡

While some degree of simple platycnemia is a common feature in Australian natives generally, I have not frequently observed the curvature in those near the shores either of the southern or northern coasts; of the natives of other parts of Australia my experience is limited. In the interior, at least from Charlotte Waters to the McDonnell Ranges, the latter condition is certainly of very common occurrence and apparently exists in association with the former so far, at least, as can be observed in the living body. References to the subject are not frequent, but a curvature of the tibiæ is alluded to by Topinard,‖ who states that "in 200 Parisian tibiæ collected from the St. Marcel and St. Germain-des-Prés cemeteries, dating from the fourth to the tenth century, 5·25 per cent. were platycnemic and 14 per cent. were bent. The latter peculiarity is not uncommon in old graves," but particulars as to the curvature are not given, though in another place the

* It is right to mention that since the above statement was written I have heard from Mr. Gillen, whom I asked to continue my investigations on the subject, that he considers these bent legs are generally associated with delicate physique in both sexes, and that he considers them a sign of constitutional disease. He mentions a girl at Alice Springs, about fourteen years of age, far gone in consumption, who has this deformity; a sister, who died of consumption, was similarly affected, but on the other hand, in another sister with consumptive aspect there is no curvature. The curve is not manifest in the father, mother and two brothers, who are strong and healthy. Mr. Gillen is under the impression that the curvature is more common in males than in females.

† Intercolonial Quarterly Journal of Medicine and Surgery. May, 1885.

‡ This is confirmed by Professor Watson, who has seen the curvature in natives of Vanikoro and Mallicolo.

‖ Anthropology, by Dr. Paul Topinard (Eng. transl.).

writer alludes to an antero-posterior curvature, associated with a prominent anterior border and platycnemia, as occurring in a rachitic condition affecting the tibiæ. A section of such a bone in the region of the antero-posterior curvature is figured by the same author which certainly differs from the usual section of an ordinary platycnemic tibia. Busk* also states that in the platycnemism of rickets the tibia is invariably more or less curved.

While it is possible that disease may lead to a bending of the bones of the ordinary platycnemic type it is difficult to escape the belief that other causes, beyond those obviously pathological, must be at work, for in the tibiæ of the Alice Springs skeleton the curvature of one and of an apparently healthy bone is as great and of the same character as in the other in which a diseased condition is conspicuous. Moreover, in the few other tibiæ of skeletons in which I have observed some degree of curvature, there was no evidence of disease visible and, as I have already said, with one exception, the living subjects of bent shin-bones appeared perfectly healthy. On the other hand it is difficult to assign an ethnological value to a condition which, however common it may be in Central Australia, must be regarded as exceptional amongst Australians as a race. The whole question is one which requires further investigations based upon the examination of actual skeletons from Central Australia which are not easy to obtain.

This bent condition of the shin-bones is well recognised by the residents in the interior, who not inaptly describe the natives so affected as being "boomerang-legged," and for this the technical term proposed seems a fair equivalent.

Dolichocephaly.

In the majority of cases the typical long-headed or dolichocephalic character of Australian skulls was apparent to the eye in the living subject.

Scaphocephaly.

The peculiar boat shaped conformation of the cranial vault, known as Scaphocephaly, and very frequently met with in Australia, was, in some instances, so marked as to be easily discernible through the integuments—particularly so in a few individuals in whom there was a tendency to baldness.

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* International Congress of Pre-historic Archæology. Third Session, 1868.

Congenital Deformities.

No example of any of these conditions was met with amongst the natives with the exception of an occasional but very infrequent squint.

Perforation of the Nasal Septum.

In the tribes met with, almost all the natives of both sexes from early adolescence onwards had the septum of the nose perforated. As a rule the hole was left unoccupied though occasionally a "nose-stick" was worn, which most frequently took the form either of a piece of the entire shaft of a long slender bone—usually I believe of the wing of the Eaglehawk (*Aquila audax*—in one end of which was often inserted the white tip of the tail of the common rabbit-bandicoot (*Peragale lagotis*). In other cases it was the half of such a bone longitudinally split with the ends rounded off, and with the surfaces either plain or marked, or sometimes it was a plain or marked fusiform piece of wood.

The operation, I am informed by Mr. Gillen, is performed in youth without any attendant ceremony, the instrument used being a pointed bone.

Knocking Out of Teeth.*

The practice of knocking out one or two of the upper central incisors prevails to a greater or less extent amongst many, if not all, of the tribes of Central Australia as well as in many other parts of the country, but it does not appear to be invariably carried out, at least at the present time. It seems in fact to be one of those customs which are going out of fashion here as elsewhere.

Many, perhaps the majority, of both the Arunta and Luritcha tribe had been thus deprived of one, usually I think the left, upper incisor, but some were certainly not so disfigured. Amongst the Aruntas Mr. Gillen informs me that the custom is only practiced by certain groups. North of the McDonnell Ranges a similar practice exists amongst the Kaitish tribe and, amongst the Warramungas, I have it on the authority of Mr. McKay, chief telegraph operator at Tennant's Creek that, though the custom exists there also, it is not general and is confined to certain families, the tooth removed being the left upper incisor. Still further north I noticed that, amongst the Daly Waters blacks, two teeth were missing,

* A technical term is wanted for this common Australian practice, but I hesitate to propose that the language of anthropology should be further burdened by the somewhat cumbrous expression "odonteccopsis" which, nevertheless, is accurately descriptive of the performance.

and again in the south amongst the tribes around Lake Eyre two also are removed. In fact, I think it is safe to say that the practice exists throughout all the tribes of Central Australia from Oodnadatta to Daly Waters.

The operation is done during youth by placing againt the tooth to be removed a stick, to which a smart blow is given with another stick or stone, men and women dealing with their own sexes respectively. Amongst the Arunta and Luritcha tribes the performance is, like the perforation of the septum, unattended by any ceremony.

Body Scars.

The name tattoo-marks, which is frequently used in this connection, is unfortunate and should be abandoned, as the scars in question, with which the bodies of Australian natives are so generally decorated, differ entirely from the coloured patterns produced by the permanent staining of the tissues with pigments to which the term tatto-marks ought to be limited.

In Central Australia nearly all the natives of both sexes bear these body scars, though not so extensively as at Port Darwin and in some other parts of the continent.

The wounds, of which the scars are the result, are amongst the Aruntas and Luritchas, inflicted without any special ceremony a little before, or about, the time of puberty without any compulsion and entirely at the desire of the individuals themselves. Males operate on males and conversely. I was told that when the scarring is extensive all the marks are not made at the same time but by instalments, the first wounds being allowed to heal before others are made.

The scars in question consist of raised cicatrical ridges sometimes narrow and inconspicuous, but more usually prominently elevated above the surrounding skin to the extent of half an inch or more and of a width of an inch or so. They take the form of long or short straight bars, arcs or small circular marks.

We were told by the natives and by others that different tribes were distinguished by different patterns, but though individuals of the same sex varied somewhat amongst themselves in this respect, I could not satisfy myself that any divergence of pattern distinguished the members of the two tribes with which we came in contact. In fact a general plan seemed common to both.

There did, however, appear to be a certain amount of difference between the patterns of the two sexes, the men being, moreover, in nearly all cases the more extensively marked.

The general plan for the men consisted of a series of long, transverse, parallel bars, to the number of from ten to twenty, extending horizontally, or nearly so, across the front of the body from above the nipples to below the navel. They were disposed at regular or irregular intervals or might be reduced in number to three or four ridges aggregated in the inter-mammary or epigastric region. The scars were frequently very prominent in the region just below the ensiform cartilage becoming there, in fact, markedly projecting folds of integument. With the above were, usually but not invariably, associated short vertical, or nearly circular, scars over the deltoid muscle and lower down the upper arm, being often in this latter region not raised above the surrounding skin. Frequently also short obliquely dispersed linear scars extended from the collar-bone downwards and outwards towards the front fold of the axilla.

These markings, mainly on the front of the body, were nearly always found upon the men of both the tribes mentioned. On the back the scars were usually inconspicuous or absent altogether, but at Tempe Downs, where the Luritcha preponderate, there were several who had their backs, in the scapular region, marked with narrow but prominent and often paired crescentic scars, the horns of the crescents being usually, but not always, turned outwards. It did not appear, however, as if these dorsal markings were peculiar to that tribe.

Among the women, who, as stated, are not so fully marked, the scars for the most part consisted of transverse bars across the front of the body, but these were decidedly shorter than in the case of the men. Their most usual situation was between the breasts, where they constituted short but very prominent folds uniting the two breasts. Occasionally they occurred upon the belly also. Other marks, not unfrequently noticed, were short oblique scars often close together or in pairs over the region of the great pectoral muscle, the lower ends inclining outwards, or short transverse, oblique or vertical scars on the usually pendulous breasts themselves. Over the deltoid or biceps were frequently other scattered, short linear, or nearly circular, marks barely if at all raised above the surrounding surface.

The operation is performed with a small sharp flake of hard stone or, since the advent of the whites, with a similar piece of glass. It appears that the usual practice is to rub ashes into the wound to delay healing, but one of our local guides stated that the down feathers of the Eaglehawk *(Aquila audax)* are also used for a similar purpose. The young man, our informant, proved himself to be an accomplished liar, but as I have heard of this application elsewhere it is not improbably true.

The marks represent a condition known pathologically as hypertrophied scar-tissue, a result well-known to follow protracted cicatrisation. I have known these cicatrices to pass into an allied condition familiar to the surgeon as keloid, and to require surgical treatment from the inconvenience caused by their presence. To this form of growth the black races generally are stated to be particularly liable, and, in them as in others, when it occurs it has a tendency to affect the integument of the anterior thoracic region especially that over the breast bone. The prominence of the scars about this region has been noticed, while on the other hand the small circular scars on the arms did not show the characteristic elevation. I was told that, on this part of the body, they were made with the point of a glowing firestick, but I had no means of verifying the statement.

Ceremonies of Initiation.*
Circumcision and Subincision.

The operations are everywhere performed by both Arunta and Luritcha natives. Indeed they both exist in conjunction amongst every tribe met with in passing through the heart of the continent from Lake Eyre to within 100 miles of Port Darwin. Neither is practised in the tribes immediatcly around Port Darwin, or according to Mr. Foelsche† amongst the coast tribes from Port Darwin eastwards to the Liverpool River. They certainly extend for long distances to the east and west of the telegraph line, and are, probably, common to the whole of Central Australia.

I use the last term of the heading of this section as a brief and convenient designation for the singular and revolting mutilation widely prevalent, though by no means universal, in Australia, in which the penile urethra is completely, or partly, laid open by incision from below. Surgically speaking an artificial condition of hypospadias is produced. Amongst the tribes with which I deal particularly, the operation is complete in the sense that the incision extends from the meatus to the angle of junction of the penis with the scrotum. Amongst some tribes on the seaboard of the Gulf of Carpentaria it is sometimes less completely performed, a portion only of the urethra being laid open, or a small hole only being made

* The term "Bora" a word of a New South Wales native language has acquired a certain amount of acceptance as meaning initiation ceremonies generally, but as these vary in different tribes, I have thought it better to adhere to terms which clearly indicate the nature of the operations performed. There can be no advantage in continuing the use of such a term as the "terrible rite" used by the late Mr. Curr.

† "Notes on the Aborigines of North Australia," Paul Foelsche, Trans. Roy. Soc. of S.A., vol. v.

which sometimes has to be enlarged.* I have evidence that this is also the case elsewhere in the Northern Territory, but whether the incompleteness of the incision is by accident or design I am not sure. Both operations are performed on the advent of puberty, and their performance is the outward and visible sign of manhood.

Circumcision is always the first to be performed, the other operation following after a variable interval; sometimes, and perhaps usually, as soon as the circumcision wound has healed, but also often, according to several very reliable informants, not until some considerable time, it may be months, has elapsed. Never, I believe, does any boy escape the ordeals altogether, and if by chance he should, through protection by the whites or for some other reason, elude the first attempt at capture he is eventually secured and forced to submit to them.

Speaking of subincision it is to be noted that the incision itself, being, by its position, out of sight, singularly little indication of the mutilation is afforded to the eye by the appearance of the parts. Though practically naked nothing unusual in the organ, in the absence of special examination, is observable except a shortening due, no doubt, to cicatricial contraction of the rudely made wound.

In spite of the difficulty of performance without the aid of an instrument that the surgeon would consider necessary as a guide, I must admit that in all the cases which I examined the operation was very thoroughly done. No special treatment for either wound is adopted beyond the usual application of ashes, earth or grease. I was curious to learn whether, under the circumstances, a squatting position in micturition would be afterwards adopted but this was not so.

For a graphic description of the ceremonies which accompany the performance of these operations amongst the Arunta Ilpma section, I must refer the reader to Mr. Gillen's paper, this gentlemen having witnessed them on several occasions. On the Horn Expedition we were never fortunate enough to meet with a similar opportunity. It was not so much on account of objections to our presence as from the fact that appropriate subjects were not available, and the proposal that one of our Afghan camel drovers who was unpopular, should be the *corpus vile* did not meet with his approval. The nearest approach to the real performance was a dress, or rather undress, rehearsal of it by the blacks at Tempe Downs, which they

* "Customs, Rites and Superstitions of the Aboriginal Tribes of the Gulf of Carpentaria." W. G. Stretton, Trans. Roy. Soc. of South Australia, vol. xvii.

undertook after some little persuasion and the promise of rewards by Mr. Thornton.

Though, of course, such a rehearsal has not the interest or value of the real performance, there is no reason to believe that it was other than a correct representation and it may therefore be interesting to describe what took place as a supplement to Mr. Gillen's notes, especially as the account has reference to another tribe (Luritcha).

After some negotiations, allusions to the subject being made by the natives in a whisper, they consented to go through the performance, but evidently first took the greatest precautions that the women should see nothing of it. While arrangements were in progress I noticed some females moving about in the camp about three hundred yards away, and holding up part of their clothing as a screen as if to prevent them from looking in our direction.

The performance began by one man going down on his hands so that his body rested on all fours. Under his belly, from either side, crawled three or four others who similarly rested on their hands and feet and propped up number one. The man who was to represent the subject stretched himself on his back at full length on the top of this living mound of men, while another seated himself astride of his prostrate body. The operator, who seemed decidedly nervous, then imitated the action of cutting, or rather, as he did it, of sawing off the prepuce with a piece of stone. The men engaged said that subincision was similarly performed. An illustration of this scene will be found amongst the photographic reproductions.

From Mr. Gillen's account it will be seen that special ceremonies accompany both operations amongst the Arunta Ilpma section, but I should mention that I was told both by members of the Luritcha and of other sections of the Arunta tribe that there was no special ceremony attached to subincision—that circumcision was, in fact, *the* important function. I am not quite sure how much reliance is to be attached to this statement which, however, was made by men believed to be trustworthy and to have a good knowledge of native customs.

While speaking of these subjects I might also mention that in Palm Creek, about a mile and a half above its junction with the Finke River, there is a place which the local black accompanying me stated, with evident reluctance, had been formerly used for these cutting rites, though it was long since it had been used.

Loose stones had apparently been roughly arranged so as to form a semi-circular curve with the two horns abutting on the ends of a low natural face of

travertine rock, the whole thus forming a D-shaped enclosure of about ten to twelve feet in either diameter. The place certainly gave me the idea of an artificial formation, but Professor Tate, while admitting that it might have been artificially improved, thought that it could be accounted for by a natural deposit of travertine from the water of an old cascade.

A horrible operation performed upon young girls is referred to in Mr. Gillen's paper. Some of my informants admitted, while others denied, its existence amongst these tribes. There is no doubt however that a similar operation does take place in many Australian tribes, and, I think, there can be little doubt that it prevails here also. Mr. E. C. Kempe, who has had a long experience of the natives, informs me that this revolting practice obtains amongst those of the Peake country (Arrabunna tribe), but it is difficult to accept his statement that it is done with the distinct view of preventing conception, though, of course, this result might follow after excessive injury. According to Mr. Kempe's account the operation consists of a laceration of the vagina by means of a sharp stick. It is performed by the old women who are sometimes directed by the old men, but it does not often now take place. A similar custom is alluded to by Messrs. Foelsche and Stretton in their papers previously referred to.

In offering a few remarks on these various ordeals to which the native youths are subjected either voluntarily or under compulsion, it is convenient to deal with them collectively, however they may differ in significance, as they all involve some mutilation of the body.

There can scarcely be any doubt that the body scars no less than the tattoo marks properly so-called, have their origin in that desire for personal adornment which is not confined to savage peoples. Among civilised races the attire affords the scope for such decorative tendencies, but where there are no clothes it is the body itself which becomes the chief, and in fact the only, means for such display. The perforation of the lobe of the ear for earrings, and the desire among many highly civilised people to have patterns tattooed upon parts of their body remain as survivals of savage methods of ornamentation. In the scar patterns there were no indications of such an arrangement as could be construed into a representation of a totem, nor could I discover that they were associated with any phase of totemism or constituted tribal badges. Indeed it appears to me that the scarring of the body, the piercing of the nasal septum (Plate 8, Fig. 4) and the knocking out of the teeth alike spring from the personal vanity which, in savage tribes, finds expression in so many grotesque or, in our opinion, repulsive practices, all of which, in their minds, have a distinctly decorative object. This view which

assigns a decorative origin to the practices in question is not invalidated by the fact that one or other of them may be made to constitute a part of the initiatory rites; as for instance among the Port Lincoln (S.A.) tribes* where scarring of the body formed the third (final) and most important stage of initiation. Facts could, I think, be cited of practices originally springing from one set of motives becoming adopted, so to speak, to those of another kind, and thus those of a non-ceremonial character might eventually gain a ritual or religious significance.

And there are no doubt many facts which can be alleged to justify the belief that the universal desire for adornment, whether of person or clothing, arose in the first place as a part of the methods of successful courtship of the opposite sex. However much decorative measures generally may have been utilised for other purposes, such as making the person terrible in war, or as a part of their ceremonials, which comes nearly to the same thing, for many of the latter are clearly imitative of combats—in all ostentatious display appears the underlying motive.

In an interesting discussion on this subject Professor Westermarck† points out that this desire for self decoration is to a great extent identical with the wish to attract attention by the charm of novelty, and he adds that "at all stages of civilisation people like a slight variety, but deviations from what they are accustomed to see must not be too great, or of such a kind as to provoke a disagreeble association of ideas."

No doubt there is considerable scope for novelty and variation in the decorative patterns which are made upon the body with pigments and other materials as part of their ceremonial performances or customs of war. Even the scar patterns afford some such scope, but it is difficult to say this much of the piercing of the septum or of the knocking out of the teeth; though in the case of the former it may at least be urged that, equally with the punctured ear-lobe, it permits of the expression of some amount of variety of display in the character of the ornament worn.

No similar advantage, however, can be claimed for the knocking out of the teeth when the only variation possible is in the number and kind removed, and in these respects such variations can hardly be said to exist, for so far as I know the selection is limited to one or both of the upper central incisors, and on this ground one might hesitate to place this operation in the same category as the others.

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* "Aboriginal Tribes of Port Lincoln." C. W. Schürmann.

† "History of Human Marriage." Westermarck.

Nevertheless, whatever may have been the real origin of the practice, the argument is still open, that this mutilation in common with the others once possessed the charm of novelty, and that when at length the novelty of the day grew into an established custom—the fashion in fact—no self-respecting blackfellow dare depart from it without loss of status or dignity. It is also to be noticed, as the writer just referred to has indicated, that all these mutilations, the searring of the body, the nasal peroforation and the knocking out of teeth have this in common that they are all instituted about the time of adolescence, a period at which the desire for personal adornment is everywhere great and at which also the sexual idea comes into prominence; moreover, as we have added, they are, in these tribes at least, voluntarily undergone.

There is no doubt, as Westermarck says, that the time of puberty or a period very shortly before it, is that selected for all such mutilations, but still it would not be difficult to quote instances in which the piercing of the septum and the knocking out of the teeth were done at a considerably earlier age.

The natives themselves when questioned, if they assign any reason at all, can give no other answer than either that the removal of the teeth as well as the other operations, are for the purpose of improving the appearance, or that it is done in obedience to long established custom which was made imperative upon them by the commands of a superior being.

We must not lose sight of the fact that the operation of knocking out the teeth may have once had a greater significance than it has at present for, in certain of the Australian tribes, its performance constitutes a distinct ceremonial to which considerable importance is attached, being, in fact, one of those which attend the initiation of the youth into manhood, and is either supplementary or in substitution of other initiatory rites, but if ever it bore such significance amongst the tribes with which I am dealing this has been entirely lost and, indeed, as already stated, the practice itself seems to be dying out amongst them.

The customs in Central Australia certainly bear out the statement that, while it is the rule amongst civilised races for the women to be most prone to ornament themselves, among savage peoples it is the men whose vanity manifests itself most conspicuously in this direction. As has been stated the former are, in Central Australia and I think generally throughout the country, less elaborately and less constantly scarred, they less frequently have their teeth knocked out or the nasal septum perforated, or if that has been done they less frequently wear a nose ornament. With the exception of a simple head-band, or one or more plain head-

rings worn by the women, decoration of the hair is confined to the men, and it is the men who most elaborately adorn themselves with patterns of coloured pigments or with plumes of feathers or other body ornaments.

So far I have alluded to the scarring of the body, the piercing of the septum and the knocking out of teeth. There is perhaps more difficulty in accepting Westermarck's conclusion that circumcision and the other phallic mutilation should also be regarded in the same light as serving originally a decorative purpose. So far as the former is concerned I am inclined to agree with him to the extent that this is a less unsatisfactory explanation than that it either partakes of the nature of a religious ceremony or was intended to promote cleanliness or to guard against disease; or than, as Mr. Herbert Spencer* has advocated, that circumcision in common with other mutilations, once the marks of subjection or of trophies taken from vanquished enemies, has developed into the idea of a propitiatory offering by man to superior or supernatural powers.

The objection to these views have been very fully set forth by the learned writer† to whom I have so frequently, and to my advantage, referred, but the subject is too long to be discussed here. There is however one important circumstance which must be kept in mind in dealing with the practices of the Australians; their homogenous physical characters, the general similarity of their habits, customs, handicrafts and mental attributes—all suggesting a common origin for the whole race—make the fact that these, and to them highly important, practices are not universal amongst them a matter of great significance. In some tribes circumcision alone is practiced, in some subincision, in others the two in conjunction, and differences in these respects may be found in two contiguous and otherwise very similar tribes. On the supposition that these practices were once common to a primitive single Australian race any theory which is to account satisfactorily for their origin should be capable of being extended so as to account for the divergencies that have since arisen. Or, if on the other hand, we suppose them to be of later endemic origin the difficulty of the same nature still remains of comprehending how practices, of such high importance, should have arisen in some tribes and not in others. Whether any of the theories that have been advanced in explanation of their origin can be so extended I must leave to the consideration of those with a wider knowledge of anthropology than I possess, but one may at least observe that, so far, no satisfactory solution of either difficulty has been offered.

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* Ceremonial Institutions. † Westermarck, *op. cit.*

There is still more difficulty in assigning a decorative origin to subincision than circumcision. Like the latter, the former, though common, is by no means universal in Australia, and, as has already been observed, the effect of the operation is not readily evident to the eye. The incision itself is certainly not visible and, though perhaps, a slight abnormality, in size or form, which may not be obvious to the stranger amongst them, may be readily recognised by their own race, it seems difficult to attach a decorative origin to a mutilation which is so little conspicuous when ostentation is the primary object of decorative methods, and, for this reason, I hesitate to accept a theory which assigns such an origin to the practice in question.

Undoubtedly, the view which is almost universally held by white colonists, and indeed by many anthropologists, is that the operation of subincision is intended to diminish the chances of procreation with a view of keeping the population within limits—the limits being primarily those required and defined by the potentialities of the food supply, and secondarily by the special trouble and difficulty in rearing children under the circumstances of their nomadic lives—and attempts have been made to show that those tribes which do carry out this singular practice are those most liable to the conditions which bring about these difficulties. The same view is not infrequently either directly stated or implied by the natives themselves, and Mr. Kempe, Manager of the Peake Station on the west side of Lake Eyre, informs me that certain individuals are there deliberately left without operation so that they may be free from the disabilities of their mutilated fellows.

And, if indeed it could be shown that the practice is limited to hunger-stricken districts, this view would receive strong support. But this is just what cannot be done. Reference to a map* indicating geographically the areas in which this mutilation, so far as it is known, is practiced, will satisfy any one with a knowledge of the Australian Continent, that subincision is practised in regions in which (at least before settlement) food supplies were plentiful, while in others, far inferior in this respect, the operation is not in force. So again, as has been mentioned, of two adjacent tribes living under exactly the same physical conditions, one may be subject to the mutilation, the other not. And if it be urged that the universal performance of subincision throughout the whole of Central Australia—where to say the least of it, the conditions of existence are not generally speaking too favourable—is an argument in favour of the Malthusian view, it may also be said that the custom is found existing in the

* "The Australian Race." Curr, vol. iv.

comparatively favoured regions of the McDonnell Ranges, no less than in the more arid areas surrounding them.

The explanation that the practice has been deliberately adopted for Malthusian purposes is again one which implies a knowledge of physiological processes, which, it appears to me, we are not justified in attributing to people of the mental status of Australians any more than we should attribute circumcision to a knowledge of the hygienic or pathological disadvantages of a long prepuce. Besides, I am satisfied that though subincision may be reasonably supposed to operate in the direction required by the Malthusian view it is by no means an effectual hindrance to procreation. Though, no doubt, relatively few children are to be observed amongst the natives, I know of several cases of three, four or even five children in a family who were undoubtedly the offspring of subincised males, and if a limitation of population be the motive, is not infanticide, which is, or was, much in vogue a simpler, readier and far more certain means of attainment of the object in view? Further, though this is not the place for a discussion of the anatomical and physiological bearing of the subject, it may be remarked that an intromittent organ which is grooved instead of tubular is found amongst birds and reptiles, and even if this condition does not, in these animals, exactly correspond to that artificially produced in man by subincision, I cannot see that, on anatomical grounds, procreative efficiency need be, in him, greatly impaired by the operation. No explanation hitherto offered of this extraordinary practice can be considered satisfactory, and it is scarcely likely that any additional information on the subject will be forthcoming to aid in a solution of the problem. A preliminary to a satisfactory review of the subject should, however, be the completion of the map of Australia, showing the entire distribution of the two rites of circumcision and subincision.

Character and Disposition.

I am fully conscious that a brief sojourn amongst a race with dispositions, beliefs and mental characters so different from our own does not justify a comprehensive treatment of such difficult and obscure subjects, and I make no pretence of dealing with them in that way. Nevertheless there are certain traits which cannot fail to manifest themselves to the traveller who is amongst them, even for a short time, and of these he may at least speak to the extent of his observations.

With regard to their disposition it was impossible to be long in the company of the blacks without being struck by their cheerful or even merry demeanour as revealed by the constant child-like laughter, very often, I suspect, at our own

expense, which accompanied their conversations among themselves. And it is on such occasions, when they are talking without restraint, that one regrets the absence of that knowledge of their language which might enable some idea of the natural bent of their minds to be gained—an almost impossible task when attempted by means of direct questioning in a strange language. Their voices are melodious, especially those of the women, and I noticed a habit which I believe is common amongst the Lowland Scots and also, Professor Tate informs me, amongst the Northern English, of indicating assent with a peculiar double nasal sound which I can only describe to those unfamiliar with it by saying that it is most nearly expressed by the attempt to pronounce aloud the letters m-h-m- with the mouth shut.

In camp they are fond of singing and one could often hear their somewhat monotonous chants kept up till a late hour. At Tempe Downs I found one evening a group thus engaged at their camp in the river bed. The men were seated* and arranged in two small contiguous circles forming a figure of eight with a small fire in the centre of each loop. They were singing and beating time on the sand with sticks and boomerangs. The women and young children, similarly seated, were grouped closely together at one end of the figure of eight and joined in the singing. There was one little boy of three or four who entered into the performance with zest, beating excellent time with the others, and squeezing himself into one of the circles when a place was vacated.

As to honesty it is difficult to judge the natives by our standards. Truly in the matter of cattle-lifting their temptations must be very great. With empty stomachs and juicy fat beef close at hand, easily obtainable, and the owners well out of the way, it is no wonder that primitive human nature asserts itself and, whilst recognising the great harm done, it is hard under all the circumstances to blame them too severely.

Of actual dishonesty or pilfering as regards ourselves no instance occurred throughout the journey though frequent opportunities offered. Messages were faithfully carried for us often for long distances, and the smallest rewards were cheerfully accepted, especially when they took the form of tobacco of which they are inordinately fond. One could not also help being struck with the extreme readiness with which, for comparatively trifling returns, they parted with belongings that must have taken much time and labour to produce. To certain

* The Australian native does not usually squat, that is to say rest the buttocks on the heels, but sits upon the ground with his knees either drawn up towards the body or the legs otherwise bent. The women have a way of adducting one thigh across the other whereby unnecessary exposure is avoided.

exceptional articles, however, they attach extreme value and part from them with the greatest reluctance. Frequently indeed, after a barter, did I experience a pricking of conscience in that it was a one-sided bargain, but I rarely saw an instance where there was any demur at the value offered for the exchange or any jealousy expressed at the idea that one man was getting better value than another.

Of their physical courage we had no opportunities of judging, though Mr. Schulze* reports them as deficient in this respect, preferring the methods of stealth and stratagem to those of open attack, and this has been the experience of many. I have never had an opportunity of witnessing a tribal fight, but those who have done so agree that their encounters are characterised by a maximum of noise, boast and outward show of courage with a mimimum of actual casualties. If certain accounts I heard are true, in which women were beaten to death, they must sometimes show great cruelty. On the other hand they often manifest a good deal of kindliness in their disposition as shown by their treatment of children or of the aged and afflicted and, in their genuine affection, in many cases, for their wives and families. There was a case in point at Tempe Downs where a blind young man of another tribe was being kept in camp and fed out of their own scanty stores. Food and clothing that has been given to them they readily share with others and, in the matter of the former, literally carry out the injunction of taking no thought for the morrow. Indeed many of their dietetic hardships might be avoided if they had the foresight to lay up a store of vegetable foods such as seeds which are produced abundantly after the heavy, if precariously occurring, rains and which are capable of preservation for a long period. Prudence of this kind, however, cannot be reckoned among their virtues.

The natives are generally reputed to be of extreme voraciousness. The facts are that the voracity which they undoubtedly display at times is due to the irregularity or frequent insufficiency of their food, and that when they are well and regularly fed they eat no more than ordinary people; of this we had ample opportunity of judging.

No sense of shame of exposure was exhibited by the men on removal of the diminutive articles worn as conventional coverings; they were taken off *coram populo* and bartered without hesitation. On the other hand some little persuasion was necessary to allow inspection of the effect of subincision, assent being given only after dismissal to a distance of the women and young children. As to the

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* The Aborigines of the Upper and Middle Finke River, etc. Rev. Louis Schulze, Trans. R. Soc. of S.A., 1891, vol. xiv.

women it was nearly always to be observed that, when seen in camp without clothing, they, especially the younger ones, exhibited by their attitudes a keen sense of modesty if indeed a consciousness of their nakedness can be thus considered.

When, at Tempe Downs, we desired to take photographs of a group of young women, they were very coy at the proposal to remove their scanty garments and retired behind a wall to do so, but once in a state of nudity they made no objection to exposure to the camera in that condition. Unfortunately nearly the whole of the photographs taken by Professor Spencer at this, one of our most westerly points, were broken in the course of transit—a kind of accident which must be regarded as one of the risks of camel portage.

That the females are not devoid of personal vanity in spite of their more scanty adornment, is shown by the time spent by some of the younger girls who had been under the influence of European manners in combing their hair with the aid of a plentiful supply of grease. It is under such circumstances that the glossy black and straight, or at most openly undulating, character of the hair can be recognised, the matted coils of the untended *chevelure* being apt to give a false idea of frizziness which does not exist.

Mental Attributes.

An analysis of the strictly mental characters of uncivilised man is too large a subject to be attempted here nor, as I have said, were our opportunities sufficiently advantageous to enable me to attempt the task satisfactorily, even as far as concerns the tribes that came under our immediate observation. In the course of our frequent questionings we realised, as others have done, the extreme difficulty with which they bring their minds to bear on abstract ideas. Accurately recognising, and distinguishing by a distinct name, every kind of animal and plant that comes under their notice, their language contains no expression for the general idea expressed by the words animal and plant. Still less could one expect to find expressions for abstract terms of less obvious significance to them. Many instances, however, could be given of their acuteness of observation which at once enabled them to distinguish animals or plants which very closely resembled one another. As Mr. Schulze* informs us they have separate names for twenty-two kinds of snakes, the distinction between some of which is a matter of difficulty even for a trained zoologist.

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* *Loc. cit.*

They also distinguish by distinct names the two very similar species of porcupine grass, from the viscid leaf sheaths of one of which they derive a resinous product used as cementing material. They have a separate and distinct name for a hill and a waterhole at its base.

A curious instance of a refinement of vernacular nomenclature carried to extremes is found in the fact that the Aruntas have three distinct names for the louse of the head, armpit and pubes, and also similarly distinguish the louse of the man from that of the woman. Every traveller has experienced the difficulty of getting an answer to such a question as "For what reason do you do this?" Though this may no doubt partly be due to a poverty of ideas and of language, I am satisfied that it is often a real want of knowledge of the facts which is the principal element in their failure to give information. Usages and customs have entirely lost their tradition of origin or significance, consequently their rites and ceremonies have come down to them as devoid of definite meaning and are performed only in obedience to the powerful influence of habit, custom or fashion.

As will be afterwards mentioned, great difficulty—practically failure—to gain information on the subject of certain ceremonial objects was experienced, and if, under such circumstances, when we had the actual objects in our hands wherewith to point the meaning of our questions, the information sought was not forthcoming it is not to be wondered at that the combination of difficulties, poverty of ideas and actual ignorance of the subject, should in more abstract matters have formed an insuperable barrier to the extraction of information.

One of the most conspicuous limitations of their vocabulary is that relating to enumeration. Specific terms for numbers exist only up to four, some, indeed, when asked to count upon their fingers could advance no further than three or could only reach four after hesitation. In the nomenclature itself, this poverty is further evident, *one* being represented by nyunta, two by tera, three by tera na-nyunta—that is two and one—and four by tera-ma-tera, that is two and two. Some of the Arunta, probably those of the south, used the terms úrpudjama and tram-írpuka for three and four respectively, which seemed to be just as well understood by all as the other expressions.

Notwithstanding this poverty of numerical expression Mr. Schulze states, in the paper referred to, that he succeeded in imparting a knowledge of the first four rules of arithmetic, and their school exercise books, some of which were still to be found at the abandoned Mission Station at Hermannsburg, showed that they had acquired the facility of writing in creditable characters.

Their memory is undoubtedly good or they could scarcely carry in their heads the endless series of meaningless sounds that constitute their ceremonial chants. I have been informed also that they become excellent mimics, which I can readily believe from the facility with which they pick up the, to them, unfamiliar sounds of English speech and their evident recognition of, and amusement at, individual and personal peculiarities. I regret to say that this imitative faculty has found expression in the acquirement and constant use of the most odious and meaningless forms of English oaths and blasphemy. One day I heard one of the native guides apostrophising his camel, with the obstinacy of which he was having some little difficulty in the matter of mounting, by the expression "You b——y liar."

It is also unfortunate that the abominable jargon known as "blackfellows' English," of which a short specimen is quoted in a footnote to p. 129, has been so universally adopted as the medium of conversation as to constitute a sort of inferior "pidgin English," but notwithstanding the limitations which it imposes it is understood when the Queen's English fails absolutely of comprehension.

Before concluding this section, in which reference is made to the faculty of observation, I cannot resist making allusion to the wonderful powers possessed by the natives of following a trail which have so often been described. These faculties, in which their whole life is an education, have long been made use of by the police departments of the various colonies which have attached to them a certain number of black trackers. We had an opportunity one morning of witnessing, in a small way, a display of these powers. It was discovered that three young emus had escaped from their box during the night and the services of our "black boy" Harry were called into requisition. He soon picked up the tracks at the starting point, followed up the trail through ground well trampled over by the numerous men and beasts of our caravan, and finally caught the birds about half-a-mile away from the camp. This same Harry before he had been more than two or three days with us recognised not only the tracks of each member of our party, but also of each horse or camel. In this I have every reason to believe that he was correct, and I have also known them to indicate the name of a native acquaintance on meeting the tracks of his bare feet. Those who have seen them at work in the serious pursuit of a culprit who was "wanted" in these parts—most likely a cattle killer—bear witness to the patience and skill with which these men track their bare-footed fellows over ground so rocky or stony that it would seem impossible for any recognisable trail to be left. A pebble disturbed, a bent or broken leaf or twig, a scratch, a little dust and a hundred other trifling signs may be quite sufficient indication to keep them on the track of the pursued. Mr.

Helms in the report of the Anthropology* of the Elder Expedition, now passing through the press, speaks of a favourite pastime being that of imitating in the sand the tracks of birds and various other animals in which there appears to be a sort of competition in excellence of execution. I never saw this being done on the Horn Expedition, but I have heard of it, as a practice elsewhere. We often, however, had occasion to notice the remarkable accuracy with which it was determined by the nature of the tracks whether a lizard or other subterranean animal was in its hole or not.

Lutheran Mission Station.

Perhaps in this place it may not be without some interest, as throwing some light upon the dispositions and mental aptitudes of the natives, if I record some observations made at the Mission Station, where I spent three or four days.

For some years, since 1875 I believe, the German Lutheran Missionary Society with the assistance of certain concessions from the South Australian Government has maintained an establishment at Hermannsburg, situated on the Finke River, immediately north of Krichauff Range, in which the Missionary labours were combined with the working of a cattle and sheep station. At the time of our visit, however, the Mission work had not long ceased, owing, I understand, to some differences existing between the local and the home parent Society,† though the pastoral pursuits were still being carried on.

The names of the reverend gentlemen, Messrs. Schwartz, Kempe, Schulze, residents for many years, are well-known as contributors to the botany and ethnology of the Upper Finke basin. Indeed, beyond scattered references in the journals of explorers and two pamphlets by Mounted-Constable W. H. Willshire, the papers of the two last-named to the Transactions of the Royal Society of South Australia, may be regarded as almost the only available sources of information on the subject of the natives of this part of Central Australia.

In the schoolroom and chapel at Hermannsburg, both showing, at the time of our visit, the effects of disuse and neglect and in the copy and exercise books of the former pupils, which were still to be found stowed away in various corners, there was abundant evidence of the efforts that had been made to impart both religious and secular teaching. But it was unsatisfactory to observe the equally abundant signs of relapse from ways of grace after so short an interval. Nowhere

* Trans. R. Soc. of S.A., vol. xvi.

† The Mission work has again been resumed—1895.

on our journey did we see natives so dirty in their habits, so squalid in their mode of life, and so devoid of the usual cheery demeanour as at Hermannsburg.

It is unfortunate that with increasing opportunities of association with the whites there is everywhere being manifested amongst the natives in Australia a corresponding degeneracy in the manufacture of their native articles or even in the entire discontinuance of their own handiwork in favour of the products of civilisation, but nowhere was this degeneration more obvious that at the Mission Station. Beyond the fact that nearly all the women wore more or less fragmentary garments of some kind, almost the only evidence, in themselves, that testified to the former missionary influence, was the predominance amongst the natives of scriptural names often in German form. Various individuals answered to such names as Matthias, Johannes, Jacobus, Daniel, Nathaniel, Samuel, Nebuchadnezzar, Miriam, Rebecca, Magdalene, and so on. It had been, I understood, customary for those who had become attached to the establishment to conform to the institutions of baptism and marriage according to the rites of the Lutheran Church. In the latter respect, however, they had not continued to follow St. Paul's injunction, with the tenor of which I presume they had been made familiar, for I saw one native, formerly the orthodox husband of one wife, who was now the happy possessor of four.

Close by the Station buildings were the remains of what had been once a well-tilled garden, containing young date palms, several varieties of other fruit trees and all the appliances for watering from a well sunk at the edge of the bed of the Finke River, and I was told that the manual work connected with its maintenance had been done by the blacks under supervision. Neither here nor elsewhere in Australia, however, have I ever seen or ever heard of attempts made by the natives to cultivate for themselves.

I was informed by those left in charge of the Station that about 100 natives were in the habit of making their camp near the Station their head quarters, but barely half that number were present at the time of our visit. Some however were absent, for the time, on hunting or visiting expeditions. Their camp was, as usual, in the sandy river bed, a few boughs roughly thrown together forming low and altogether inefficient shelters.

Under the order and supervision of the Missionaries, for the sake both of shelter and decency, some fifteen to twenty well-built "humpies" or dome-shaped constructions of boughs, which really were capable of affording some protection against the weather, had been constructed on the raised bank of the river. These,

however, had been completely abandoned in favour of their old squalid camp in the river bed. One reason I was told for their abandonment was the absence of the sanitary precautions which become more necessary in the case of a permanent habitation than in one the site of which can be changed in a few minutes.

Altogether I failed to observe any features in the condition of the natives that might be considered evidence of an abiding improvement either mentally, morally or physically, which have resulted from the labours of the Missionaries. Rather the reverse in fact.

I do not doubt that under the stimulus of the presence and example of civilising elements they may be led temporarily into ways that conform, outwardly at least, to our ideas of decency and that they can, to the same extent, be restrained from much that is objectionable to our sense of propriety; but, as has been shown so frequently in Australia, no reliance whatever can be placed on the permanency of the change, and, as I have indicated in another section, it seems absolutely certain that the ways of civilisation bring attendant evils in the way of deterioration of physique and particulary of liability to pulmonary consumption that far out-weigh the little good that is done in other directions. Even the half-castes brought up from childhood in decent, comfortable, civilised homes and educated up to the point of reading and writing, sooner or later show the same intolerance of, and repugance to, the restraints of civilisation as the full-blooded blacks, and, like the Reverend John Creedy in another region, they are ever prone to relapse eventually into the freedom, licence and squalor of the life of their own race. With many such relapses are periodic; the fit comes upon those who are in the service of the whites; they deliberately leave behind their civilised clothing, join their tribe and resume its ways for a time, returning after a period to seek service with their former masters until once more the restless impulse impels them to go forth into the bush again to have what they call a "spell."

Tribal Government.

If it was difficult to arrive at reliable conclusions on the subject of territorial distribution of the tribes, it was still more difficult to obtain satisfactory information in respect to the vaguely constituted powers and privileges of persons of authority. I must consequently refer the reader to the remarks upon this subject of Mr. Gillen, whose opportunities have been so much greater than my own and whose statements relate to the Arunta tribe and particularly to the Arunta Ilpma section of it.

I was, however, able to gather on my own account a certain amount of information respecting the social divisions, or class systems of this same tribe which, if not new, may have a certain value as confirming the statements of others who have made a special study of a very intricate question. Many interesting details, lacking in my own paper, which throw light upon the inter-relations of the various classes, will be found in that of Mr. Gillen.

Social Organisation.

One of the most conspicuous features of the social life of many of the tribes of Australian natives which determines much that is curious in their actions and customs is the organisation of the tribe into exogamous marrying classes, and these again frequently into sub-classes or even smaller groups.

Wherever these class divisions exist, the laws arising out of them have extraordinary force and are, in general, implicitly obeyed whether in respect of actual marriage, illicit connections, or social relations. Infraction of them is a sin of the highest gravity. Seldom, indeed, are they broken or, if so broken, rarely is the offence persisted in for long, in the face of scandalised public opinion, or does it escape actual punishment. Nowhere in Australia, I believe, are the laws arising out of these divisions more strongly in force than in the tribe of which I write.

The whole subject—a large and difficult one—has been very thoroughly investigated and set forth in various publications by Messrs. Howitt and Fison,* whose main contentions are, I think, completely supported by the practices of the widely extended Arunta tribe. Indeed Mr. Howitt is aware of the fact as regards a part of that tribe at least. On the authority of the Reverend H. Kempe, then attached to the Lutheran Mission at Hermannsburg, he quotes the Aldoliña tribe on the Finke River as conforming to the general plan of social structure as elucidated by him, though departing therefrom in certain respects.

I have elsewhere stated that the term Aldoliña is not the name of a tribe but only indicates a section of the Aruntas lying in a particular direction.

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* "Australian Marriage Laws," Fison, Journal Anthrop. Inst., vol. ix. "From Mother-right to Father-right," Howitt and Fison, *Ibid.*, vol. xii. "Notes on the Australian Class Systems," Howitt, *Ibid.*, vol. xii. "Further Notes," *Ibid.*, vol. xviii. "Organisation of Australian Tribes," Howitt, Trans. Roy. Soc. of Victoria, vol. i., part 2. "Kamilaroi and Kurnai," Fison and Howitt. "Australian Group Relations," Howitt, "Report of the Board of Regents of the Smithsonian Inst.," 1883. See also Appendix by Howitt to "Notes on some Australian Tribes," Palmer, Journal Anthrop. Inst., vol. xiii.

Nevertheless it is quite true that the organisation described for that section extends throughout the whole of the tribe, of which it is a part.

This organisation I will proceed to describe, but in order that it may be fully understood by those who are unfamiliar with a rather complex question, some preliminary explanation is necessary, which has been made easy by the writings of Messrs. Howitt and Fison and particularly by those of the former gentleman, to whom every worker in Australian ethnology owes a debt of gratitude and from whose papers I have freely borrowed.

As shown by the authorities quoted, the primitive social division of Australian tribes, which Mr. Howitt considers to have been originally undivided communes, are two primary exogamously intermarrying divisions or classes. For these the term phratries (L. H. Morgan) will be used in this paper as conveying a better idea of their status and inter-relations than the term class.

Following Mr. Howitt's suggestion we may conveniently represent these two phratries by A and B. With each of them is associated, in many tribes, a number of totem clans bearing the names of some natural objects usually, but not always, those of animals or plants, each group of totem names being in fact "a several and collective representation of its primary (class)."

With such a social structure the correlative marriage restrictions are, broadly speaking, that a male of A may only marry a female of B.

In certain tribes, however, where the associated groups of totem clans exist a further restriction has arisen which imposes upon a male of A, represented by a particular totem, the obligation to marry only a female of B, represented by some one or other particular totem.

This condition may be represented by the diagram :—

Phratry.	Totem Clans.
A	1, 2, 3, etc.
B	I., II., III., etc.

under which a male of A represented by totem 1 would be required to marry a female of B represented by any or by some particular totem.

In a further degree of elaboration each of the phratries A and B is divided into (usually) two subphratries, each couplet of subphratries being associated, as before, with a group of totem clans; or, continuing Mr. Howitt's plan of graphic representation, such a social structure may be thus represented :—

Phratry.	Subphratry.	Totem Clans.
A	a α	1, 2, 3, etc.
B	b β	I., II., III, etc.

Under this scheme the marriage restrictions vary according to the tribe, one—the usual—arrangement being that males of "a" and "α" must marry respectively females of "β" and "b"; another that "a" and "b" marry "b" and "β," and, according to Mr. Howitt, in certain tribes at least, a totem of one class (phratry) is restricted to a particular totem in the other class. Further, in such cases of secondary fourfold division descent is usually, indirectly, through the *female*, the children of an appropriate marriage belonging to the fellow sub-class of that from which the mother is derived. Thus the offspring of a marriage between "a" and "β" would belong to "b."

Various modifications, by suppression or amplification of the factors of the above scheme—which may be regarded as the most typical and symmetrical—occur in different tribes as is set forth in the papers referred to and, according to Mr. Howitt's opinion, all, in which class divisions occur at all, are consistent with the idea of the former existence of two primitive phratries even should this not be directly manifest.

With the last diagram in mind we may easily realise the organisation of the Aruntas, for here the manifest feature is the division into four subphratries. These are named Pultarra, Panunga, Purula and Kumarra.* The two divisions of primary rank, or phratries, do not appear upon the surface, nor can I, after much enquiry, discover that totems exist in the sense that clanships are thus constituted which impose marriage restrictions.

* The spelling of these names will be found to vary a little from that stated elsewhere, but that given in my opinion best expresses the actual sounds. Pultarra is sometimes pronounced with an approach to the sound of Pultharra.

In conformity with the previous schemes we may then represent, symbolically, the Arunta organisation as follows :—

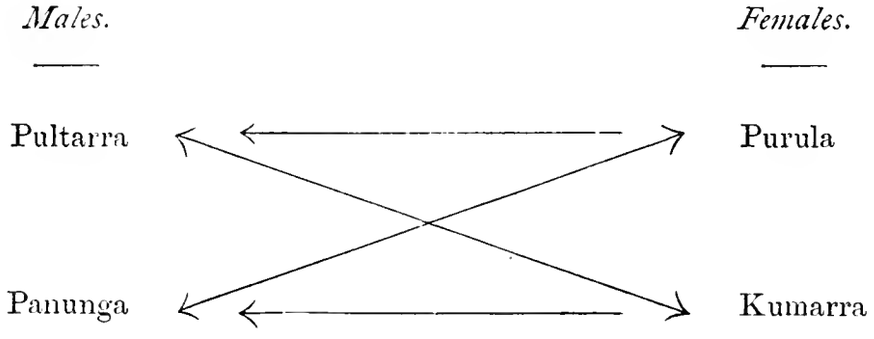
Phratry.	Subphratry.	Totem Clans.
	a α	
	b β	

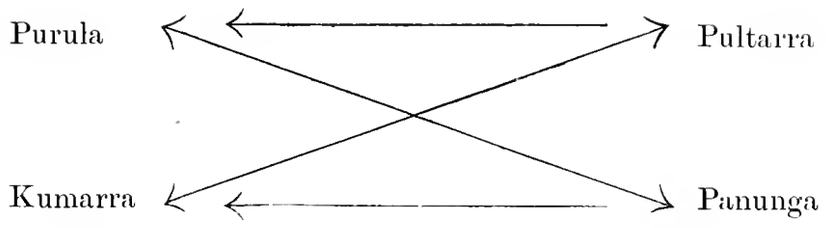
There is no manifest evidence of the existence of primary classes (phratries) or of totem clans, at least in the sense that additional marriage restrictions are thereby imposed. Under this arrangement "a" and "α" marry "β" and "b" respectively —the usual arrangement as stated above, but in this tribe the descent is, indirectly, through the *male*, the children belonging to the fellow sub-class of the father. Thus the offspring of "a" and "β" belong to "α."

Abandoning now symbols for actual names the Arunta arrangement may be thus set forth :—

Male of	Marries female of	Children are
Pultarra - -	Kumarra - -	Panunga.
Panunga - -	Purula - - -	Pultarra.
Purula - - -	Panunga - -	Kumarra.
Kumarra - -	Pultarra - -	Purula.

Or to use again another of Mr. Howitt's useful methods of graphic representation the facts may be represented by the following simple diagrams :—





in which the conjoined arrows indicate the obligatory marriage connections and the single arrows point to the phratry nomenclature of the children.

I have previously stated that the fact of the existence of two primary classes or phratries is not directly manifest. Nevertheless, a reference to Mr. Gillen's notes will, I think, show conclusively that these did at one time exist. The relations between the Pultarra and Panunga ; between Purula and Kumarra and of the two couplets to one another are such as to indicate that these two pairs of subphratries represent the two original primary divisions, the names of which, however, have entirely disappeared, and the existence of which has been lost sight of. With regard to the absence of totem among the Aruntas clans I shall indicate later on that, though certainly not operative in the sense we are considering, viz.—of imposing additional marriage restrictions, it is quite possible that totem groups of a kind do actually exist in this tribe as well as amongst the Luritchas.

The Reverend L. Schulze has, in his paper,* described the organisation of the natives coming under his observation chiefly, but not exclusively those of the Arunta tribe, as consisting of eight divisions in place of four.

It may seem presumptuous for a mere traveller to urge views in opposition to those of a long resident whose opportunities and whose knowledge of the language have afforded facilities so much greater than his own, for arriving at correct conclusions, but in justice to myself I must say that from no single individual, white or black, could I get confirmation of the correctness of Mr. Schulze's scheme. If there was one subject on which the blacks were ready with their information it was this. Questions as to what were the names of the divisions ; to which did a man belong ; into which divisions might he marry and what would be the designation of his children were answered willingly and without the slightest hesitation, discrepancies or variation. Europeans long resident in the various parts of the district told precisely the same story, and whatever absence of information or contradictory statements met us upon other subjects there was no failing in respect of this. Moreover, the Reverend H. Kempe writing to Mr.

* *Op. cit.*

Howitt of natives of the same tribe as form the subject of Mr. Schulze's paper admits only the four classes here mentioned.

The four supplementary names which, with the four that are here mentioned, constitute Mr. Schulze's scheme of eight divisions were perfectly well recognised by the natives, and were stated to be the corresponding or equivalent names of the four divisions in other neighbouring tribes, though what these tribes were I could not gather further than that a northerly habitat was vaguely indicated.

As bearing on this point, however, it is interesting to note that in the Warramunga tribe, according to the account supplied to Mr. Howitt by Mr. Allan Giles,* the eight classes do appear to exist, and amongst their names are to be clearly recognised, at least, three out of four of those of Mr. Schulze's supplementary subphratries. Whether the possibility exists that there has been a duplication of names in this as in the other case I cannot say.

As has already been mentioned a similar fourfold division exists amongst the natives to the eastward of Alice Springs, along the Plenty and Marshall Rivers, who may possibly be an extension of the same Arunta tribe. To the north of these in latitude 18° Lindsay† reports that tribal divisions exist without, however, affording any information to show whether they are to be regarded as equivalent to phratries, subphratries or totem clans.

Such details of social organisation as have been related refer to the Arunta tribe and may be relied on as far as they go, but it is a matter of extreme regret that I cannot make any parallel statements concerning their westerly neighbours the Luritchas. I am confident that some such organisation exists amongst them, probably an identical one, but I must confess not only to having completely failed myself to gain any definite information as to the social construction of that tribe, but to a similar failure on the part of an intelligent observer whose calling brings him frequently into contact with these natives and who undertook to continue my inquires on the subject. It was clear that some marriage restrictions are recognised amongst them, but I am quite unable to say how these are constituted or how the divisions are named. I regard this deficiency as one of the most serious in this paper and would have gladly avoided it if I could. For had I been able to establish the existence of a complete social organisation for this extensive and widely scattered tribe it would have very materially extended the area over which such organisations are known to exist. My difficulties can, however, be

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* Journal of Anthrop. Inst., vol. xviii., page 43.

† *Op. cit.*

recognised in the facts already mentioned, viz.: that the Luritcha natives do not speak English, that their remoter situation brings them less frequently than the Aruntas, under the observation of those few settlers who care to undertake such investigations and the still fewer who know how to extract information from unwilling or suspicious witnesses.

No one who enters upon this subject can fail to ask himself what has brought about these elaborate and complex schemes of social organisation amongst Australian tribes, most, if not all, of which seem to fall within a definite system in spite of variations in complexity and completeness. The view, usually accepted, is that they have been deliberately designed as a provision against consanguineous marriages, an instinctive horror of which is believed to exist amongst most races of men.

No doubt such organisations are the means of preventing such marriages, and anyone who will take the trouble to work out symbolically for a few generations the results of the various schemes will easily see their relative degree of effectiveness in this direction, and he will find, of course, that the restrictions on marriage increase with the greater degree of elaboration of the subdivisions. But even if the explanation be admitted that the class divisions have been adopted designedly for this purpose of imposing marriage restrictions and thus preventing consanguineous marriages, there still remains the fundamental difficulty of explaining the precise grounds on which rest the alleged instinctive horror of incestuous marriages with which man and particularly uncivilised man is generally credited.

The whole of this question is certainly closely bound up and is probably identical with that of the origin of exogamous marriage itself—a subject which has been discussed by many philosophical and ethnological writers and which has recently been ably reviewed in a masterly manner by Westermarck* who advances opinions of his own upon the question.

The exact basis on which the repugnance to consanguineous marriages rests, however, still remains an unsolved ethnological problem, no explanation as yet being wholly free from objection, and probably the whole question is one in which we shall not advance beyond the stage of conjecture.

The subject is altogether too long for complete discussion in this place, but I will only say in reference to the explanation which is probably more free from objections than any other and which, perhaps, is most generally received, viz.: that

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* "The History of Human Marriage."

the possible evils of racial deterioration resulting from such marriages have been recognised as a reason—in fact an all-sufficient reason—for their avoidance and for the building up of a set of ordinances, by which they might be prevented, is difficult to accept. For that view implies that constitutional results should have been clearly recognised and stringently guarded against by primitive man, while, with the greater knowledge and experience of the present day and at a time when questions of heredity have been made the subject of special inquiry by the most acute minds, there is by no means unanimity of opinion as to what the effects of consanguineous marriages actually are. And even if we may suppose that bad results should have sometimes made themselves manifest, it is scarcely to be believed that the sexual desires and passions of primitive man should have been deliberately subordinated to a reasonable, thoughtful solicitude for his posterity, when similar prudential motives fail to be operative amongst races of greater education and experience.

A remarkable feature, which has also been alluded to by Mr. Howitt and others, is the pains which are taken by a man to ascertain whether a strange female belongs to a phratry or subphratry, with the members of which he may have relations, and the readiness and facility generally with which this status is recognised. This may not be surprising if both parties belong to the same tribe, but it is noteworthy that these statements should also be true in the case of a male and female of different tribes who may not speak the same languages.

Nevertheless I have reason to know that the recognition is not always as spontaneous as is sometimes believed, that is to say, it sometimes happens that the curiosity, which is always evinced on the meeting of strangers, to learn the phratry status of each other as a preliminary to entering into relations can only be satisfied by direct inquiry through other parties. In some instances it is possible, and even probable, that the recognition may be due to the use of the gesture language. At any rate there is no doubt that such recognition does take place with great facility, and that temporary marital rights over females of equivalent and corresponding phratries of other tribes are, as the result, afforded to aboriginal travellers in strange territories—it may be, as in the well-known case quoted by Mr. Howitt, over a thousand miles of territory, and this may be said without reference to the question as to whether such temporary accommodation affords an example of communal marriage.

The preceding paragraph raises another debatable question, viz.: as to the value of the evidence brought forward in support of the theory of a former

existence by promiscuity or communal marriage amongst the Australians. Again, without entering fully into this discussion, I may state that the only actual evidence personally elicited, which might be taken to have a bearing upon the point, was to the effect that, after the ceremonies connected with circumcision, a promiscuous interchange of lubras takes place. I am bound to say that the evidence on which this statement is based is not absolutely reliable as regards the Arunta tribe, but Mr. Horn, who has had a long and intimate acquaintance with the tribes about Streaky Bay on the west coast of the Port Lincoln Peninsula, informs me that such promiscuous intercourse, often carried to a revolting extent, undoubtedly takes place on similar occasions amongst the natives of that locality.

Some facts related by Mr. Gillen may be also regarded from the same standpoint. How far they may be rightly used as arguments in favour of the theory of promiscuity is another matter which cannot be discussed here; I merely mention them as possibly having a bearing upon a highly interesting and important question which has been the subject of much discussion.

Native Foods.

(a) Animal.

There are few living animals that come amiss to the Central Australian aborigine. To mention the names of all that are eaten would be largely to recapitulate the zoology of the district and I believe entirely so in the case of the mammalian fauna. In the hilly country the Euro *(Macropus robustus)* and the Rock Wallaby *(Petrogale lateralis)* are fairly abundant but, I believe, scarcer now than formerly, and though throughout the Horn Expedition we saw comparatively few of the Great Red Kangaroo *(Macropus rufus)* on my previous journey these were numerous on the plains both to the north and south of the McDonnell Ranges.

The most frequent method of capture of the large marsupials is by lying concealed at a waterhole and spearing them as they come in to drink, or they may be driven into an ambush by organised parties, or run down with their packs of mongrel dogs. The dingo itself is eaten. Besides the larger kangaroos and wallabies there are various smaller marsupials which are obtained either by firing the porcupine grass (*Triodia*) and so driving them towards a given point, where they are speared or knocked on the head, or by digging them out of their holes. The latter operation is done with "yam-sticks," and great

dexterity is shown in their use as well as a remarkable discrimination in determining whether the animals are at home or not. When obtained, furred animals are roasted, or rather half roasted, in the ashes in their skins, and everything is eaten. Large bones are broken and the marrow extracted

Many, if not all kinds of birds are also eaten, and of these the emu, from its size, may be reckoned the most important in this respect. It, like the kangaroo, is also often captured by spearing at the soakages or waterholes. At the Tarn of Auber, Glen Edith, we saw a pile of stones that had been erected to serve as a ambush for this purpose. In certain parts they are, however, not unfrequently caught by poisoning with pitchuri *(Duboisia Hopwoodii)*. A bunch of the leaves and twigs of this plant is placed in a small waterhole, or, if it be a large one, into a limited portion of it, which is dammed off from the remainder, access to the main body of water being in such a case prevented by a brush fence. On drinking the water thus poisoned the birds become stupid and dizzy—"all same drunk" as the blacks put it—when they are easily killed.

Nestling birds are considered dainties, as also all kinds of eggs, especially those of the emu and native pheasant or mallee hen *(Leipoa ocellata)*, which from their size or number afford a good supply of nourishment.

Our guide, "Harry," stated that his tribe did not eat pelicans, but I could not get any satisfactory confirmation of this reasonable exception, when considered from a gastronomic point of view.

So far as I could learn, almost all kinds of lizards are eaten, especially the larger forms mentioned in the report on Reptilia. So also snakes, though, according to Mr. Schulze, the poisonous varieties are rejected.

The large waterholes supply several varieties of fish, which are caught by forming a cordon across the hole and frightening them by noise and splashings into a shallow circumscribed end. Mr. Gillen informs me that they are also taken by spearing with a light unbarbed spear rounded at the point. From a man at Owen's Springs, I acquired a small fish-hook made of thin iron wire to which was attached about ten feet of line composed of two untwisted strands of very thin fur string, but I cannot say whether the art of line fishing is indigenous to Central Australia, or has only been learned from the whites. Fish-hooks, however, of native manufacture, made of wood, bone or tortoise-shell, are described from Victoria and Queensland ("Aborigines of Victoria," R. Brough Smyth). Poison is not used.

Frogs are appreciated, especially in times of drought, when the water-holding kinds, particularly the larger *Chiroleptes platycephalus*, affords a considerable amount of fluid.

I was informed that crabs but not crayfish are eaten, and this accords with Mr. Schulze's statement. Professor Spencer, however, tells me that he was informed that the latter were eaten, and suggests that the discrepant statements may arise from a want of discrimination between the bearings of the English names. He further adds that, of the two, the crayfish is much the better eating; the crabs being practically worthless as food.

Lerp Manna.—At various localities, particularly in the bed of the Todd River near Alice Springs, and in that of the Hugh near its junction with the Finke, the leaves of *Eucalyptus rostrata* bore the small white conical or tent-like coverings of the larvæ of a species of homopterous insect belonging to the Psyllidæ. Occasionally the same structures were seen on the leaves of *E. microtheca*. According to Dr. Thomas Dobson* the insect, of the larvæ of which the "lerp" examined by him was the product, is *Psylla eucalypti*, but I am not aware whether the lerp of other eucalypts than those mentioned by him is referable to the same species or not. These coverings are the result of a glutinous secretion from the bodies of the larvæ, which, in parts, takes the form of a feltwork of tubular hairs. Though small, not usually exceeding a sixth of an inch in diameter, they sometimes occur upon the leaves in great numbers, and can then be collected in quantities by the natives. In the locality mentioned the destructive method of obtaining them was by cutting down the entire trees. In taste, the substance is distinctly saccharine and, on analysis, the Lerp Manna of *E. dumosa*† was found to contain both a starch-like substance (Lerp-amylum) and a sugar.

Under the name of Witcheties—a term used by the whites as well as understood by the natives throughout the central districts, though it does not appear to be a word belonging to the language of either of the tribes—are included certain larvæ, in respect to the mature forms of which there is some uncertainty. One very large white kind, known at Alice Springs as "Udnirringíta," believed to be the larva of a large longicorn beetle, reaches a length of four or five inches, and the thickness of a finger, and is much appreciated. The promotion of the supply of this grub forms the motive of one of the most important food ceremonies of the Arunta natives, which is fully described in Mr. Gillen's paper. They are

* R. Soc. Tasmania, vol. i., 1851, p. 235.

† Flückiger, Watts Dict. of Chem., 1875, 2nd Suppt.

found principally in the roots of *Eucalyptus rostrata*, which are sometimes completely riddled by them even to the destruction of the life of the tree. They are dug out with yam-sticks, collected in large quantities and eaten after slight roasting. Whites, who have tried them, speak well of their flavour, but I never could summon courage to make the experiment.

Other smaller kinds of larvæ also of uncertain identity, some of which occur in the roots of acacias, are also similarly used.

Various kinds of caterpillars, which at certain times appear in great numbers, are collected and eaten.

The honey-bearing individuals of the "Sugar Ants" form a very favourite article of consumption when they can be obtained, and, as in the case of the witchetie, there appears to be a special ceremony to promote the supply. Professor Spencer informs me that three species were collected on the Expedition, viz.: *Camponotus inflatus*, native name, "Yarumpa," the commonest kind; *C. cowlei*, native name, "Ittutunie;" and *C. midas*. Of these the first two are certainly, and the last probably, used as food. On one or two occasions we saw places where colonies of these ants had been dug out. The abdomens, distended with the honey-like substance, are bitten off and swallowed.

Bee Honey.—I am informed by Mr. Gillen that bee honey, "Ultaamba," is eaten though, I believe, no honey-making bees were collected on the Expedition.

Mr. Schulze mentions, as a food, an insect (*Cicada*, sp. ?) which comes out of the ground in summer wherever the *Eucalyptus rostrata* occur. We had information to the same effect, and we frequently saw split pupa cases half in and half out of the ground, but Professor Spencer tells me he is unable to identify the insect specifically.

Food Restrictions.

With regard to the rules observed concerning food restrictions amongst the natives, I was personally unable to obtain any reliable information, and I must, therefore, refer the reader to Mr. Gillen's paper, in which he alludes to certain restrictions of the kind as affecting animal food.

Cannibalism.

This is one of those subjects on which it is extremely difficult to get reliable information. When a native is asked whether human flesh is ever eaten by the blacks he is nearly certain to deny that it is done by his own tribe, but not

improbably he will confess to the practice among his neighbours. I think, on the whole, the evidence is in favour of the former existence of cannibalism amongst these, as well as amongst some other Australian tribes, at least to the extent that young children were sometimes eaten. But whether the bodies of adults, such as prisoners captured in war, were ever so disposed of, as indicated by Mr. Schulze, I cannot say. In recent times I have never heard of a well authenticated instance of cannibalism, even in the case of young children, though there can be no doubt that the practice of destroying newly born offspring is still sometimes maintained.

(b) Vegetable.

Under this head I append a list of all the plants which actually came under my notice as furnishing food products. I do not doubt that there are many others which are similarly utilised in the region visited, but as I have no certain knowledge of them I have included only those which I either saw being used, or in a few instances others, in respect to which, after referring the plant itself to the natives, I received information that I think can be relied on.

The collection of all vegetable food is as stated by Mr. Schulze and Mr. Gillen, essentially the work of the women, who, as the former gentleman states, may also take part in the digging out of underground animals. Hunting, in the proper sense of the word, is undertaken by the men.

For the names and identification of most of the plants mentioned, and for the revision of this section, I am indebted to Professor Tate, the nomenclature and arrangement being that adopted in his report on Botany.

CAPPARIDEÆ.

Capparis Mitchelli. "Native orange" or "native pomegranate."

Capparis spinosa.

The fruits of both species are eaten.

CRUCIFERÆ.

Lepidium ruderale. "Native cress." All the green parts of this plant, which have a cress-like flavour, are eaten raw or cooked upon hot stones or ashes.

PITTOSPOREÆ.

Maiden, on the authority of Tepper, reports that the intensely bitter seeds of *Pittosporum phillyroides* are ground and eaten by the aborigines of the interior, but the latter gentleman informs me that, in some way or other, this statement has been made in error. The natives questioned on the subject denied that the seeds were ever so used by them.

STERCULIACEÆ.

Brachychiton Gregorii. Mr. Helms (Report of the Elder Exp. Exped.) states that the seeds of this tree, which was frequently met with in a particular belt of country, are eaten, and that its roots are chewed. I was similarly informed as to the seeds.

PORTULACEÆ.

Claytonia Balonnensis. "Mŭnyeru," "Wŏkăti." In all parts of the districts visited by the Expedition the small black seeds of this plant, and probably of other allied species, were used as foods by the natives. It is collected in large quantities by the females on their "Pitchis" or wooden boat-shaped receptacles. The seeds are cleverly winnowed from the husks by pouring them from one vessel to another in the wind, or by blowing. They are then ground on a large flat bed-stone by the to-and-fro movements of a hard rounded, or flattened, waterworn pebble held in the hand, water being added from time to time. The resulting paste may be eaten raw, but is more usually baked in the ashes and converted into a kind of cake. This is very insipid, but it must posses good nutritive properties, as, in many camps, "Mŭnyeru" seemed to be the chief article of diet.

By the blacks of Alice Springs (Arunta) this seed is called "Ing-witchika," which appears to be the real native name, though the term "Mŭnyeru," by which it is known to Europeans, is invariably understood. "Wŏkăti" is the Luritcha name.

In these districts "Mŭnyeru" takes the place of the spore cases of "Nardoo" *(Marsilea quadrifolia)*, which is so much used in the Barcoo and other districts to the south and east, these being treated in a similar way. Though this plant grew abundantly in many parts visited by the Expedition it appeared not to be used as food by either of the tribes with which we came in contact.

Claytonia, spp. "Parakylia" of the settlers and, probably, of some native tribes. "Periculia" (Stuart). This term is probably applicable to *C. Balonnensis*

and *C. oleracea*, and possibly to other species. The plant is eaten raw or baked in the ashes. It is similarly eaten by the whites, its crisp succulence supplying a pleasant and useful variation to the ordinary monotonous fare of bush life, which is largely devoid of anything in the shape of fresh vegetables.

In regions where the water supply is scanty "Parakylia" forms exceedingly useful fodder plants for stock, which have access to a plentiful supply, can, to a large extent, do without water.

URTICACEÆ.

FICUS PLATYPODA. "Native fig." The fruits, which are dry and full of seeds, are eaten.

CASUARINEÆ.

CASUARINA DECAISNEANA. "Desert Oak." The young subacid cones are eaten.

SALSOLACEÆ.

RHAGODIA NUTANS.

RHAGODIA SPINESCENS.

Although I did not observe the act, I have no doubt that the small berries of these plants are consumed as food by the natives, for they occur very plentifully, and have a flavour which was sufficiently agreeable to commend itself to some members of our party.

LEGUMINOSÆ.

VIGNA LANCEOLATA. I once observed a native eating the raw roots of this plant and he told me that they were also baked in the ashes.

ACACIA, spp. The seeds of several species of Acacia are largely used as an article of food. Within my knowledge those of *A. sentis*, *A. pyrifolia*, *A. frumentacea*, Tate, and *A. salicina* were thus used, but there are, without doubt, other species which contribute to the supply, and amongst these are probably *A. Kempeana* and *A. Farnesiana*.

Not far from Crown Point station there is a large circular basin-like depression in the ground, whether natural or artificial I do not know, which is

about forty feet in diameter and five in depth; it is called Ultwinna. At the bottom of this is a large boulder stone on which rest two smaller waterworn pebbles. In and around this depression ceremonials take place, which are designed to promote the supply of acacia seeds *(A. frumentacea)*. It may be observed that the large size of the seeds of this species renders them easy of collection. Lubras are forbidden to approach the place.

MYRTACEÆ.

I was informed that the bark of the young roots of species of mallee are eaten after being pounded and roasted. Mr. Helms (Report of the Elder Exp. Exped.) makes the same statement, and describes the process of preparation.

SANTALACEÆ.

SANTALUM ACUMINATUM. "Quondong," "Native Peach." The brilliant ripe red fruit are eaten both by the natives and white settlers. Although rather dry and insipid in the raw state, they make, when cooked, a pleasant preserve. In several rock shelters I observed fragments of the stones which had evidently been cracked for the sake of the kernels. In one such shelter at the Tarn of Auber, Glen Edith, I noticed a number of the seeds perforated at one pole with a neatly made round aperture of about a third of an inch in diameter, through which the kernels had been extracted, but the natives to whom I showed the seeds could give me no information as to the manner in which the perforation was made, or even as to whether it was made by their own race.

SANTALUM LANCEOLATUM. "Native Plum." The small purple fruit are eaten raw.

CUCURBITACEÆ.

MELOTHRIA MADERASPATANA.

CUCUMIS CHATE.

The fruits of both species are eaten, especially the latter from its superior size.

LORANTHACEÆ.

We frequently saw the natives pluck branches of *Loranthus Exocarpi*, *L. linophyllus*, or *L. pendulus*, and eat the berries as they walked along.

GOODENIACEÆ.

Leschenaultia divaricata. The Arunta tribe derive a pitchy substance from the root of this shrub, which they told me they used for the same kind of purposes as the resinous substance extracted from porcupine grass (*Triodia pungens*) (q.v. *infra*). The Luritchas, whom I questioned on the subject, said they ate the root, though I had no opportunity of observing the act.

ASCLEPIADACEÆ.

Marsdenia Leichhardtiana. The unripe or even the ripe fruit of this plant are eaten. In the latter condition they form a food which, I should say, was about as palatable and nutritious as sawdust.

SOLANACEÆ.

I saw the natives pluck and eat, in the raw state, the fruit of *Solanum esuriale*, *S. ellipticum* and *S. petrophilum*, and I could not learn that any poisonous properties were attached to them. Near Fowler's Bay, in the Great Bight, they are reported to eat the fruit of *S. hystrix*,* but only after removing the dry prickly calyx and seeds and making the remainder into a cake with the pounded and baked bark of mallee roots (*Eucalyptus*, sp.), or if eaten raw only after being buried for a few days (Tate). So, also, in the same locality the fruit of *S. simile* is eaten, but not until it has fallen to the ground.

MYOPORINEÆ.

Myoporum Dampieri. The red drupes are eaten.

LILIACEÆ.

Xanthorrhœa Thorntoni. The white basal parts of the inner leaves are eaten raw or roasted in the ashes.

CYCADEÆ.

Encephalartos Macdonnelli. Maiden† reports that the kernels of the seeds of certain species of Encephalartos are eaten after precautions to remove the

* Annie F. Richards, Trans. R. Soc. S.A., vol. iv., p. 136.

† "Useful Native Plants of Australia." Maiden, p. 40.

poisonous properties which are recognised in them. In certain parts of the McDonnell Ranges, where we found this cycad growing, the natives always denied that the seeds are eaten in any form by them. I have recently received from Melville Island, Northern Territory, a quantity of broken fragments of the husks of the seeds believed to be those of *Cycas media*, which were found in a native camp, the contents having evidently been eaten. Mr. S. Dixon informs me that the seeds of *E. Dyeri*, found between Esperance Bay and Albany, are eaten after being buried for a time.

PALMÆ.

Livistona Mariæ. The white basal parts of the inner leaves of the young plants are eaten raw or cooked.

TYPHACEÆ.

Typha augustifolia. The young shoots and roots are eaten raw or roasted.

CYPERACEÆ.

Cyperus rotundus.* In almost every camp we saw large quantities of the tunicated tubers of this plant, which are generally called "Erriákŭra" or "Irriákŭra" by the Arunta natives. In some parts however the term "Yelka," "Yelki" or "Yilka" is used, and this is the name by which it is generally known amongst the whites. At the Mission Station they were called "Errignia." Of all the vegetable foods this and "Mŭnyeru" seemed to be much more freely consumed than any others, at the time of our visit indeed these were often the only foods seen in camp. These little tubers which sometimes are aggregated into masses, nearly as large as the fist, are dug up by the women with yam-sticks, and are either eaten raw or very slightly roasted by shaking them in a wooden vessel with a few live embers. Even raw they are pleasant to the taste, having an agreeable nutty flavour, which is much improved by the slight roasting. Like "Mŭnyeru, "Erriákŭra" must possess good nutritive qualities, as in many camps it appeared to be the only food that was being used. It is the only native vegetable food I tried which can be characterised as agreeable to the palate.

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* This species was determined by the inflorescence of plants grown in Adelaide from tubers brought by the writer.

GRAMINEÆ.

The seeds of species of Panic grass—of which those of *P. decompositum* are the most largely used—and, possibly of other grasses, all of which occur in great profusion at times, are collected in quantities and treated in the same way as "Mŭnyeru." One kind is known at Alice Springs as "Etwuta," another as "Alcherta." A kind of cake is there also made of a mixture of the ground meal of "Ingwítchika," "Mŭnyeru" and "Etwuta."

Honey.

The flowers of some of the species of Grevillea and Hakea, particularly of the former, contain nectar in sufficient quantities to be shaken out and collected for eating.

Plants used for other purposes than for Food.

SOLANCEÆ.

Duboisia Hopwoodii. "Pitchuri." Though growing in various parts of the districts visited and especially in the neighbourhood of Lake Amadeus and Ayers Rock, the chewing of the leaves of this plant appears not to be practiced by the native inhabitants as it is by those of districts adjoining the Queensland border, where it is also extensively used as a trading article. Its poisonous properties are, however, well recognised, and they are utilised for the purpose of poisoning emus, as previously described.

It is perhaps worth noticing that in the neighbourhood of Port Darwin fish are similarly poisoned, being either stupified or killed outright by similarly placing in pools the leaves of a plant which was identified by Mr. Holtze, junior, as *Tephrosia lamprolobioides*. Mr. Foelsche informs me that the pounded bark of an unidentified tree is also similarly used in the same locality. Mr. Maiden* mentions *Tephrosia purpurea*, Pers, as being employed in the same way in many tropical countries, but its poisonous properties do not appear to be recognised by these natives.

Nicotiana suaveolens. "Native tobacco." For human use the place of "Pitchŭri" is taken by the abovenamed plant. Growing freely in many places the chewing of its leaves and stems is a general practice amongst both the Arunta and Luritcha tribes. Though in several instances I saw portions of the dried plant

* "Useful Native Plants of Australia." Maiden, p. 204.

used in their natural condition, the proper method of preparation, for which I am partly indebted to Mr. Gillen, is as follows: The variety preferred is that growing on the tops of stony ranges; of this the leaves and stems are dried in the sun. These are then ground into powder, which is mixed with an equal quantity of the white ash of the leaves and fine twigs of *Cassia eremophila* if available, if not, of those parts of some other bush, and the mass is made into a bolus of suitable size with saliva. This is chewed and passed from mouth to mouth, a bolus lasting about twenty-four hours. When not in use it is carried behind the ear or in the head or arm band. The lubras are allowed to chew the plant only in the natural state. Mr. Gillen informs me that the plant is used as a trade article as far north as Tennant's Creek.

GRAMINEÆ.

Triodia pungens. Porcupine grass. This, which is the common species in the McDonnell Range districts, has viscid leaf-sheaths. From these a nearly black resinous exudation is obtained, the material of which is extensively used by the natives, as a cementing material in the manufacture and mending of many articles. The method of preparing it, as communicated to me by Mr. Gillen, is as follows:—The leaves and stems are pounded into fine shreds; as much as possible of this fibrous material is discarded, while the sticky residue is collected and melted by holding close to it a burning stick or bunch of burning grass. The mass is then placed on a heated flat stone and well kneaded with another hot stone, which is held between two pieces of wood. It is then ready for use, or, if allowed to harden, it can be re-melted when required. I was also told that use is made of the masses of this exudation which accumulate at the bases of burnt porcupine. For the composition and qualities of this substance *vide* "Spinifex Resin" J. H. Maiden, Proc. Linn. Soc. N.S.W., 2nd ser., vol. iv. (1889), p. 639; also, "Notes on some Vegetable Exudations," by the same author, Rep. Horn Exped., pt. iii., Appendix.

Reference has been made to the use of the root of *Leschenaultia divaricata* as the source of a similar product. The root is heated in the ashes, and, by rubbing it on to a stick, a plastic substance detaches itself from the bark which hardens as it cools. When in the plastic condition it is moulded and hammered so as to form a cementing union, or rather moulding, for the point of junction of objects which were to be united. I saw the blacks go through the performance as a demonstration, but though it was clear that a sticky substance could be thus obtained I had no evidence that it could be produced in quantity, or that it is put to practical

use (*vide* Maiden, Rep. Horn Exped., pt. iii., p. 197). In all of the articles collected it was Triodia-resin that formed the cementing substance.

PORTULACEÆ.

PORTULACA FILIFOLIA. The long and copious involucral hairs of this plant supply a cottony down which is largely used, either in its natural white state or stained red or yellow with ochre, for purposes of decoration in ceremonies and corrobborees as will be described elsewhere.

Water Supplies.

Though, on the map, the Finke and its tributaries constitute a noble river system it must be remembered that these only run as continuous streams after exceptionally heavy rain, and then only for a comparatively short time—the waters soon subsiding, partly by absorption into the parched sand of the river bed or by running out on to flat expanses where they soon evaporate and disappear. There are a few places, however, where a thin stream may continue to run, during long periods, for a mile or two, and in many, after the subsidence of the floods, there are left behind pools of water of greater or less size and permanence; some being replenished by springs. Even where such natural reservoirs do not exist water of potable character may be obtained, in many places, by digging in the sand to a depth of from a few inches to a few feet. In this way, along the course of the Finke, and its feeders, the natives find a sufficient supply, even in dry seasons. In the parallel series of high ranges which are collectively known as the McDonnells, there are many localities where permanent soakages or springs ooze from the rock faces and collect in deep rock-waterholes at their base, which afford never-failing supplies of clear cool water, and these, overflowing their basins and running for a few yards or more encourage a luxuriant growth of ferns, reeds and bulrushes. Such rock-waterholes, of which several exist at the base of Gill's Range, are favourite camping grounds for the natives, and it was at these localities that we often found evidence of their presence in the drawings upon the rocks.

So also rain may collect and remain for long periods in rocky hollows which are sheltered from the sun, even though not reinforced by natural soakage.

On the sandy plains or undulating sand-hill country to the west of the McDonnells the sources of water supply are much more precarious and recourse is had to the native wells. These are holes into which a slight soakage flows, not usually exceeding five or six feet in depth, though, as in the instances to be quoted, they

may be considerably deeper. Occurring often at long intervals apart, in the most unlikely situations, and with no conspicuous landmarks to indicate their presence, they are often difficult to find unless under the guidance of the natives or those well acquainted with the country. The accounts of explorers contain many references to such welcome and scanty sources of supply discovered with difficulty or unexpectedly come upon. Though frequently protected by brushwood this often fails to prevent access by wild dogs and other animals; these, in their attempts to reach the water, frequently fall in, and being unable to get out their bodies remain to contaminate the water.

Such native waterholes were visited by the section of our party which visited Ayers Rock and Mount Olga, and I give Professor Spencer's description of them, as it will give some idea of the nature of the drink which sometimes awaits the thirsty traveller and his parched beasts.

1. Native well, known as Kamaran's Well; native name "Urntŭrpătă." This is situated on a flat amongst sand-hills, between Winnall's Ridge (about a mile and a half to the south of this) and Lake Amadeus. It is a deep hole in a deposit of travertine, about eight or ten feet in diameter at the top, and narrows down to four or five feet at the bottom, where there is a pool of water a foot, or at most, two feet deep. The surface of the water is some fourteen feet below that of the ground. At the time of our visit it contained the bones of five dead dingos, which had evidently ventured in, in search of water, and had been unable to clamber up the nearly vertical sides.

2. Native well, known as Coulthard's Well; native name "Kurtĭtĭna." Situated on a flat amongst sand-hills, about ten miles south of Lake Amadeus. This is also a deep hole in a deposit of travertine, but is much smaller than in the case of Kamaran's Well. It starts with a diameter of three feet at most, and descends somewhat obliquely for ten feet, where there is just room for one person to turn round. From the base of the main hole a smaller one runs off sideways, going down about two feet more. In this is black damp mud, which, after having been scooped out, was replaced by water trickling in very slowly. After about twelve hours some three quarts were secured.

A somewhat similar experience met our party on the overland journey from Port Darwin, where, on camping for the night at a certain well, which had been sunk by Government for the convenience of travellers, the first bucket drawn brought up a portion of the decomposing entrails of a beast, probably a wild dog.

Fortunately, in these arid regions, the precarious supply from natural sources is supplemented by the fluid which can be obtained from the roots of certain trees, and this is in dry seasons made use of by the blacks. By cutting or breaking off segments of roots, about the size of the wrist and under, and allowing them to drain into vessels or directly into the mouth, it is stated that a very considerable amount of limpid fluid can be obtained, and the accounts of explorers contain numerous references to the fact.

Of the trees whose roots are so utilised the "needle bush" (*Hakea leucoptera*), perhaps, enjoys the best reputation as a water-bearing tree. The roots of a Currajong (*Brachychiton Gregorii*), and of the Desert Oak (*Casuarina Decaisneana*), both trees met with in a wide belt of dry sand-hill country, are stated to be thus used. Certain eucalypts are also similarly mentioned in this respect, and of those met with in the districts visited, *Eucalyptus oleosa*, *E. terminalis*, *E. gamophylla* and *E. eudesmoides*, may, probably, serve a like purpose. There are other eucalypts also which, in other localities, enjoy a similar reputation, but I am unable to speak from personal experience on this subject.

Natural hollows in trees also occasionally afford a certain amount of water which has collected. Mr. Helms (Rep. Elder Expl. Exped.) records the use of an improvised suction tube, made of the loosened bark of a twig of a quondong tree, (*Santalum sp.*) to obtain water from such a situation. As we have in the South Australian Museum a similar article from Fowler's Bay formed out of an artificially hollowed wooden stem, fourteen inches in length and three-quarters of an inch in diameter, the use of such a tube may be common in dry regions.

The succulent "Parakylia" (*Claytonia*, spp.) is also capable of assuaging thirst in man as it is in animals.

Mention has already been made of the water-holding frogs, which contain sufficient fluid to be of material use for thirst-quenching purposes.

Though no such work came under our own observation I feel constrained to mention, when so much is said of the want of prudential foresight on the part of the natives, that the construction of a reservoir by means of a dam of earthwork is

not unknown amongst them. Mr. Ernest Giles* describes such a structure of considerable dimensions at Youldeh, not far from the head of the Great Bight, and a similar instance is recorded by Leichardt.† I may state that I am indebted for these references to Mr. A. T. Magarey,‡ who has recently, under the title of Aborigines' Water Quest in Arid Australia, dealt in an exhaustive manner with the whole subject of the native supplies of water.

In the search for water the keen observation of the natives, as well as of the explorer or bushman, whose faculties become sharpened by the necessities of the situation, take advantage of such signs as the direction of the tracks of animals, of the flight of birds or even of the trend of a string of ants, and, in the paper referred to, Mr. Magarey has mentioned a number of birds whose flights or presence have afforded indications which are thus made use of. So far as our own experience went, in the Horn Expedition, we rarely failed to find the expected supply, but I observed on several occasions that, if we had been ignorant of the exact locality of the water, we might have been guided to the spot by flocks of black cockatoos (*Calyptorhynchus stellatus*) which kept hovering about it, uttering their harsh cries, and, when camped at the water-holes we rarely failed to notice at eventide the peculiar flight to the water of the bronzewinged pigeon (*Phaps chalcoptera*). The rock pigeon (*Lophophaps leucogaster*) was also a well-known visitant to the water-holes, and, in the same vicinity, we frequently saw large flocks of the chestnut-shouldered finch (*Tæniopygia castanotis*).

Artificial Drinks.

I could not hear that these natives were in the habit of making any kind of artificial drink, and Mr. Gillen informs me that he is unaware of such a practice.

Native Pigments.

For purposes of ornamentation of their bodies, of their manufactured articles, or for their drawings, the colours red, yellow, black and white are used.

To produce the first two the ferruginous minerals, known as ochres, are employed; these are ground up into fine powder, sometimes in a shallow spoon-shaped depression in the natural rock, sometimes with the same kind of handmills as are used for grinding seeds. When used for any of the purposes mentioned the

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* "Australia Twice Traversed." Ernest Giles, vol. ii., p. 93.

† Leichardt's journal of "An Overland Expedition in Australia," p. 405.

‡ Australasian Association for the Advancement of Science, vol. vi., 1895.

fine powder is mixed with grease. A light and a dark shade of red ochre occur with intervening tints; possibly the lighter shades may be produced by mixing white earth with the red ochre.

Wood charcoal similarly ground supplies the black pigment in the parts visited, though in the Peake tribe, immediately to the south of the Arunta, black oxide of manganese (wad), which produces on the body a fine glossy black colour, is used.

The white pigments are variously derived from gypsum, burnt and powdered, from some white clay, such as kaolin or from calcareous earths. A natural whiting appears to occur in the neighbourhood of Hermannsburg, as indicated by a sample forwarded to Professor Tate, to whom I am indebted for the information.

Antiarra. (Plate I., *bis.*).

When at Henbury on the Finke River, I had the opportunity of visiting a place called Antiarra situated from twelve to fifteen miles to the east of the Station, which proved to be of so interesting a character that I shall describe it somewhat in detail.

Standing in a recess at the foot of the steep southern escarpment of the middle of the three divisions into which Chandler's Range is divided, and towards its eastern termination, is an altar-like rock. The mass of the escarpment, of Ordovician age, which has an average height of about 100 feet though it sinks to somewhat less than this near the "altar," consists of quartzite with bands of soft friable sandstone. That which I have called the altar, for reasons which will appear, is a portion of the harder stone which has better withstood the weathering that has excavated the recess in which it stands. A gentle slope of natural rock leads to the foot of the altar, and a few rough natural steps in the rock afford access to its top just beyond its western end—that to the left of the observer in the plate (I., bis).

Almost the whole of the lower half of the front face of the altar is decorated with alternate vertical stripes of red ochre and white (burnt) gypsum and a considerable area of the same surface is stained to a dark reddish-black with an encrustation of dried blood which, having evidently been spilt at the top, has flowed down over the front face; runlets of blood have trickled from the main mass to the base of the altar partially obscuring the painted stripes. Judging of the size and thickness of this encrustation it must have required a

considerable amount of blood to produce it, and it was clear also that it was not all of the same age, some of it evidently being of quite recent date.

In the rocky slope leading up to the foot of the altar are several spoon-shaped depressions in the solid rock that had been used as natural mortars for pulverising the red ochre and gypsum for decorative purposes. Immediately at the foot of the rocky escarpment a few yards to the west of the altar is a deep-looking nearly circular rock-waterhole said to be permanent; and at a distance of a hundred yards or so right in front of the stone is a clump of eucalypts near which corrobborees are stated to be held. On the escarpment itself, to the west of the stone, were growing a good many small trees of *Callitris verrucosa* with other vegetation consisting mostly of small shrubs.

It was very clear that the Antiarra stone is an object of some important significance and veneration to the blacks. They were unwilling to speak of it at all, when they apparently did refer to it among themselves they spoke in whispers, and it was only with some difficulty that the following particulars were gathered chiefly from the local black who guided me to the spot with a taciturnity hard to overcome.

It appears that in the cold season the male adult natives collect here and bleed themselves from the arm on the top of the stone, allowing the blood to spirt over the edge on to its face. The reason of this performance was exceedingly difficult to gather, but it seems that its object is a sort of propitiating function designed to ensure successful kangaroo hunts; at least this was the only reason assigned.* Lubras (women) and children are not allowed to see the place, and if they should do so, according to my informants, they are certain to die. They are told by the elders of the tribe not to pass that way; so also was it stated that if a member of a strange tribe should see it he is killed.

These were all the particulars I could gather concerning this interesting object after much questioning. How far they are correct I cannot, of course, say—any doubt upon the subject does not lie so much in the discordance of the accounts given to me by the blacks, but rather in respect of their extreme reluctance to speak of the place at all and in the difficulty, so invariably met with, of getting a plain answer to the simple question, as put in the jargon with which they have been familiarised, "what for blackfellow make him blood jump up?"—for what

* From remarks contained in a letter recently received from Mr. E. C. Cowle, it appears that the promotion of the fecundity of the kangaroo may be the special object, or at least one of the objects, of this function, and he further states that there are other localities which are associated with similar performances in connection with the supply (or with the fecundity) of other animals.

reason do they bleed themselves? If, however, the account I have given as to the purpose for which the stone is used be correct, and there is no doubt as to the fact that blood is spilt upon it for some purpose or other, it seems proper to speak of the stone as an altar. I have not heard of any other similar object in Australia.

Venesection.

Attention having been turned to the subject of venesection I was much surprised to find how common is the practice amongst the blacks of both the Arunta and Luritcha tribes, and the information I gathered on the subject may perhaps be conveniently related here.

Certainly a very large number of the adult men show one or more scars of a phlebotomy, either at the *lieu d'élection* at the bend of the elbow or over the superficial veins of the fore-arm, but here again it was exceedingly difficult to get satisfactory and sufficient information on the subject. As in the case of the Antiarra stone, allusions to the subject of bleeding were almost invariably made in whispers, and the subject mentioned with some reluctance. No doubt the most frequent reason for the operation is the fact that human blood is the approved glutinous medium for causing adherence to the body of a vegetable down which is used either in its natural white state or mixed with red or yellow ochre, to decorate the body in their ceremonies and corrobborees, and as these are frequently held venesection must be frequent for this purpose alone.

We had an opportunity of witnessing the operation at Alice Springs as part of the preliminaries of a corrobboree, which will be described in another section. The subject, who is a special individual, squatted on the ground and had his upper arm bound round with native string in the orthodox fashion; the operator, similarly a selected person, squatted in front of his patient and, with a very small piece of glass not more than half an inch long and a quarter wide, notched and sawed at the integuments of the bend of his elbow for nearly five minutes before the vein was opened. The operator would have been still longer over the business if he had not changed his piece of glass, which was very blunt, for another which had a keener edge. When at last the blood did flow freely it was caught in the hollow of the haft of a shield (the spear-thrower is often used for a similar purpose), the operator vainly endeavouring to promote the flow by stroking the arm in the wrong direction or against the venous current (see Plate XV., Fig. 18). The quantity of blood thus obtained, about six or eight ounces, was applied to the body with a roughly improvised brush, made by twisting a strand of native string round the end of a rough untrimmed stick.

At Tempe Downs the blood used, for the same purpose on a similar occasion, was obtained by stabbing with a sharp stick the exposed mucous membrane of the patent subincised urethra, the flow being promoted by a manipulation similar to that used in milking.

Spears, when about to be used on a marauding expedition, are decorated with transverse or spiral bands of blood, and, so also, certain of the ceremonial sticks, hereafter to be described, are on special occasions adorned with down made to adhere by blood. The statement that blood is drawn for the purpose of administering it to persons "close up dead" (*in articulo mortis*) was made by several informants and is doubtless correct. Other instances of the use of human blood amongst the Arunta blacks will be found in Mr. Gillen's paper.

Mr. E. C. Kempe, manager of the Peake Station, informs me that a similar practice of blood-letting from the arm in connection with their ceremonials is carried on amongst the natives of the Arrabunna tribe which adjoins the Arunta to the south, and which occupies the country to the west of Lake Eyre. Here the subject is always a male, who may be either old or young, though rarely the former, or married or single. Gason, in his most excellent account of the Dieyerie tribe, who occupy country to the east of Lake Eyre, relates other instances of the same custom, so that in some form or another the practice of bleeding from the person has a very wide range in Central Australia.

Ceremonials and Corrobborees.

A very large element in the lives of the Australian natives throughout the whole country are certain dancing festivals generally spoken of, collectively, by the whites as corrobborees. I am not aware of the origin of this term, which has been long in use, but, in all probability, it is a derivative from some native word in use by some tribes on the eastern coast, which were those earliest known to Europeans. In this connection, however, it is interesting to note that the Arunta word is "Quaapara," which might have very well answered for the origin of the European term, but that the word corrobboree was in use long before anything was known of the natives of Central Australia.

So far as the Aruntas and Luritchas are concerned—and, I believe, the remark will be found applicable to a very large group of Central Australian natives, to most of the tribes indeed that have been mentioned in this paper—a broad distinction is to be drawn between ordinary corrobborees, on the one hand, which are merely dancing and singing festivals, arising out of exuberance of spirits,

or the desire to do honour to guests or visitors—springing, in fact, from very much the same motives as prompt civilised communities to dances, dine, or otherwise make merry together; and, on the other, certain performances which, although they include dancing and singing as part of the programme, yet have a higher significance, in that, they are ceremonies held of the highest importance, being designed either as invocations to promote the supply of various sources of food, or serving the purpose of ceremonial functions attaching to their most sacred rites.

Of the food-producing festivals, as illustrated by that in connection with the promotion of the supply of the "witchety" grubs, and of their important initiatory rites of circumcision and subincision, Mr. Gillen has given a very complete account from the point of view of an eye witness, and all I can add to his statement is that, so far as I can learn, ceremonies of the same class exist in connection with other sources of food supply. Whether, independently of food supplies, these ceremonies are held solely in honour of what I have considered to be a totem (see next section), I am unable to state, but some such motive seems postulated to account for such a function as the Mulga ceremony, a tree *(Acacia aneura)* which can hardly be regarded as a source of food, and which grows in unfailing abundance. Nevertheless, the wood of this tree is largely used for a variety of purposes, and, in this respect, may rank with the necessary food articles as a suitable object of reverence. These are, at any rate, the ceremonies with which certain ceremonial sticks and stones are associated that will be referred to in the next section, and again by Mr. Gillen. The difference in the importance which is attached to these two classes of ceremonies, the corrobboree and the festival, is shown by the fact that, while no particular reticence exists about the former—indeed the offer of a few sticks of tobacco is sufficient to initiate preparations for a corrobboree—the latter is the subject of much secrecy and mystery, and there are some that even Mr. Gillen, who enjoys the confidence of the natives, has not been permitted to witness.

Whilst I am unable to speak of the food-producing ceremonies with the authority of an observer, our party had opportunities of witnessing ordinary corrobborees wherever the blacks were collected together in any number, as at Crown Point, Tempe Downs and Alice Springs, and it may not be without interest to relate a short account of one of these which we had the opportunity of seeing from the very commencement of preparations. And it may perhaps be as well to mention, lest the statement of the inferior significance of these corrobborees should unduly minimise their importance, that even these are very elaborate performances. There are not only a great variety, each known by a specific name and requiring special and appropriate decorations and appurtenances, often of a very elaborate description,

but also like our own more complicated dances, consisting of a recognised, definite and orderly series of figures, each having its proper accompaniment of chant.

On promise of suitable reward it was arranged that a corrobboree should be held at Alice Springs. It was called, as we learned, "Atnimokita" or "Atnumokita," meaning the corrobboree of the forked stick.

The central feature of the corrobboree, and that from which it takes its name, is a forked pole—átnŭma—about 14 or 15 feet high (Plate XV., Fig. 19). This was decorated with transverse or oblique bars and spots of yellow and white on a ground colour of red ochre, and erected at the western end of a space about 20 yards long by 10 yards wide, which had been carefully cleared of grass, sticks and stones. Then followed the decoration of the performers, which was rather a long proceeding. A considerable quantity of the cottony involucral hairs of *Portulaca filifolia* had been collected and carefully separated from all twigs. Separate portions of this were either coloured by admixture with dry pulverised red or yellow ochre, or kept in its natural white condition. Freshly coagulated human blood, drawn in the manner previously described, formed the medium for attaching this down to the bodies. The subject of the venesection is usually, and was in this case, the local chief, the operator was the chief's brother who performed in the presence of the local medicine-man ("Railtchewa").

As I have elsewhere stated, blood for a similar purpose was, at Tempe Downs, obtained by pricking the mucous membrane of the subincised urethra. During the time that the incision in the arm was being made the following is chanted by the bystanders :—

Ŭnka chaapanie ŭnka na-a-a——
Ŭnka cha— chaapani aamen-a-a——

While the blood is flowing :—

Ŭnka cha chaan ca cha-a-a——
Owini amen aa-a——

and

Ókatain teyn man ca-a-a——
Tain ma ókatain tain ma tain ma-a-a——

With an improvised brush the blood is daubed on to the body and the Portulaca down made to adhere. While this is being done the chant is :—

Ai ŭnchŭn cha-la-laa-a-a——
Ŭnchŭn cha-la-lai.

It may be as well to state here, as the remarks are applicable to almost all corrobborees, that the natives are quite unable to assign any meaning to the words of these and other chants, of which there are a great number. They appear to be merely a collection of sounds uttered with varying emphasis, but each corrobboree has its own special set. As they are uttered they form a series of recurrent rhythmical dull monotones, nearly always occurring in couplets, each couplet being repeated over and over again during the performance of the act or figure of the dance to which it is appropriate. The sounds represented by each line of the couplets, as here attempted to be expressed in writing, increase somewhat in strength towards the end of the line, but finally die completely away in the prolongation of the terminal syllable which, in type, is indicated by a repetition of the vowel followed by a dash. Indeed whatever charm these monotonous chants possesses, and they are by no means devoid of euphony, is due to the gentle and even way in which the voices, naturally melodious, fade away to absolute stillness. The prevailing monotone of the chant is however quite compatible with much vigour of utterance, in fact, as will be seen in Mr. Gillen's notes, certain choruses are accompanied by gestures of intense excitement.

The body decorations, which vary considerably in character and style according to the corrobboree, consist of patterns on front and back either done in red, yellow, black or white pigments mixed with fat, or made with white or coloured Portulaca down, or with the down feathers of certain birds, the latter materials being made to adhere with blood as described above. Some of those used in the Atnimokita corrobboree are shown in Plate XV., Figs. 19 and 20, but the decorations are often very much more profuse. The construction of elaborate headdresses or helmets form an important part of the preparations. The basis of those we saw in use consisted of a tall or short conically pointed or rounded framework of the terminal twigs of *Hakea sp.* or of *Cassia eremophila*, the thicker proximal ends being brought together to form the point, the whole cone being amply bound round externally with native fur-string, and the lower ends trimmed and arranged so as to form a cavity for the head. Into the bundle formed by the top ends of the twigs, in the conical forms, a plume, made by enveloping the stems of a bundle of emu feathers in a sheath of grass stems, was inserted and secured—or in some cases the helmets were without plumes. The upper part or, in some cases, the whole, of the face is covered with down as described before, circular openings being left for the eyes, and the application of the down is continued uninterruptedly from the face on to and over the greater part of the helmet so that its lower edge is completely concealed. The result is an extremely grotesque and mask-like aspect. By variations in the shape of the helmet, by the

presence, absence of or variation in the plumes, by differences in the patterns of adherent down, or by the addition of accessory appendages a great variety of styles can be produced, some of which are represented on Plate VIII., Figs. 1 to 5, and Plates IX., XIV. and XV. Each corrobboree has its appropriate patterns of head-dress no less than of body decorations.

After these various preparations, which occupied the greater part of the day, the corrobboree began at about eight o'clock in the evening. At the eastern end of the cleared space, the forked pole being at the western, was a seated group of about forty women, children and old men mostly naked, and in the midst of the group several small fires were kept carefully burning for warmth's sake in the keen night air. These individuals constituted the singing chorus, the men also beating time by the concussion of two boomerangs, and the women adding an accompaniment of low, hollow-toned clapping sounds, similar to those emitted by striking the cupped hands together. These they produce by striking with the half closed hand on the natural hollow which exists, in the sitting posture, at the junction of the pubes with the adducted thighs.

The actual performers in the corrobboree were on this occasion ten, a small number when compared to that which takes part in a more regularly organised entertainment. All these were decorated after the manner described and wore, besides, as anklets, bunches of green eucalyptus branches, leaves uppermost, (Plate XIV., Fig. 17*) which were tied on with strands of the bast of bark (eucalyptus). Nothing else beyond these decorations was worn except the small fan-shaped tassels attached to the pubic hairs (Plate VI., Fig. 8). In their hands they carried thin wands, about five feet long, coloured with spiral markings of red and white.

As is usual the performance consisted of a series of advancing and retreating movements executed with the peculiar stamping step common to all the corrobborees that I have seen; this was done in such excellent time as to produce only one simultaneous, loud impact of the feet upon the ground. The scene was illuminated with the light of burning branches, which were from time to time added to the adjacent fires by members of the chorus group.

After the execution of several of these advancing and retreating movements a lubra from the chorus group advanced to the dancers, then standing near the pole, one of whom went out into the darkness towards the south, while another male, from the chorus group, went towards the north. On this all the lubras and children retired to a short distance, but on the return, after a few minutes, of the man from the north the women and children resumed their places. Then, after a few more

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*This illustration refers to a different corrobboree.

minutes, the man to the south was heard, out in the darkness, advancing towards the corrobboree ground, yelling periodically as he approached; each yell was answered by a couplet chanted by the seated chorus group, voices and accompaniment dying away to absolute stillness as before described. The man from the south having then resumed his place amongst the dancers, there followed again a series of advancing and retreating movements of all the performers in transverse lines which were succeeded by similar movements of one, two, three, or four of them at a time; every figure being accompanied by its appropriate chant repeated many times over and always dying away to silence.

Amongst these chants their frequent repetition enabled me to distinguish the following, each couplet being repeated a great many times:—

Amŭng arókata ma yi a-a——
Amúngata pŭnchipá angela-a-a——

Amingaa tŭnpla amula ring-pa ra-a-a——
I-mutalla muralla karai-i-i——

Urnatchi pauera ta-a-a——
Urnatchai paur tchariecha ra-a-a

Kŏtchiŏk cha-íng piñá-a-a——
Ókŏtchai ókŏtchai ing piñá-a-——

Mŭngáta mart i pi-í-í——
Mŭngáta mart arai mungáta mart arai-ai-ai——

Chaakwi iluna mungarū mŭñí-í-í——

Unga punka chie catch-i killa urí-i-í——
Úng-appa chikka-a-a wolpera-a-a murí-í-í——

This kind of performance was continued without cessation till the early morning; on the following evening it was resumed, and it was not completed until the third night. On that evening, on which the body and head decorations were changed, the conspicuous movement was the frequent encircling of the group of performers by one of their number, who extracted dismal notes out of a straight wooden trumpet made out of a piece of mallee (*Eucalyptus, sp.*) from which the heart-wood had been eaten out by termites. Again, at one stage, the women and children retired to a short distance, soon afterwards returning to their places; and at another stage a performer climbed up the pole and rested for a time in the fork (Plate XV., Fig. 19), while the others continued their evolutions to the chanting of the chorus.

At Tempe Downs, where we also saw a corrobboree, the decorations and the performance itself were very much of the same character though there was no

forked stick or any equivalent central feature. The performers in this case were all, I believe, of the Luritcha tribe.

Ceremonial Sticks and Stones. "*Churiña*" (Plate VII.)

Under this head I deal with a class of objects of some symbolic import which are common to a large group of natives in the interior. Concerning them a good deal of secrecy and mystery exists amongst the blacks, and very little has been said, or seems to be known, of their true significance. Collectively, the term "Churiña" is applied to them in the Arunta (Gillen).

I had been for some time familiar with the objects in question, from the fact that during recent years the South Australian Museum has received a good many examples from various parts of Central Australia. I knew also, before setting out on the Horn Expedition, that special value was attached to them, that they were made objects of mystery and concealment, and that they had some kind of connection with important rites and ceremonies. These facts made me very anxious to gain further information concerning them, but I regret to say that, in spite of much inquiry and of an unusually favourable circumstance, in which a considerable number of them were found in their place of concealment, I am not in a position to throw very much further light upon their meaning. Still I believe, that in the very little I have to say, I am on the right track.

Mr. Gillen, who has had a large number of them in his possession, informs me that he has devoted special attention to the matter, and that he has collected information which is to form the subject of a paper to be published elsewhere, and, I may add, that his information has been acquired since he wrote his paper which accompanies this report. I am, however, unaware of the conclusions to which he has come, and I can only offer independently my own views, with a full consciousness of their incompleteness and possibly speculative character.

The objects in question are, as indicated by the head-line, of two kinds—sticks and stones. The latter are certainly the rarer, and appear to stand in greater value and importance, though I believe their associations are of the same nature.

The typical form of the wooden articles is that of a slab of hard wood, which is either flat on both sides, plano-convex or concavo-convex. The ends taper to more or less obtuse points or are rounded. Many of them are in fact exaggerated forms of the well-known "bull-roarer" ("Irula"), which itself must be regarded as belonging to the same category of articles (Plate VII., Fig. 9). Indeed, every

gradation of size may be found from that of five or six inches in length to that of as many feet. Most of the smaller sizes have a perforation at one end, the larger ones are, with few exceptions, unperforated. Both surfaces are marked with various patterns, of great sameness of style in all those collected on the Expedition, which are cut with the incisor tooth of some small marsupial such as Bettongia. And almost invariable they are uniformly coloured with red ochre. Mulga (*Acacia aneura*) seems to be the wood used.

The incised patterns consist, in the great majority of cases, of a series of groups of concentric circles, half-circles or larger or smaller arcs; of bands made up of sinuous or straight lines or of rows of dots, these various elements being usually combined to form the whole pattern. A few typical examples are shown on Plate VII. Some of the longest of them show abundant signs of having been smeared with blood and decorated with Portulaca down, and two or three bear the sinuous outline of a snake incised along the whole length.

The form of the stones is most frequently that of an oval, ellipsoidal or asymmetrical plate of micaceous rock; occasionally they are obtusely pointed at the ends like the sticks, or, more rarely still, approach a cylindrical shape with rounded ends. The greater number are unmarked, but a few bear patterns of the same general character as the sticks, though simpler and more rudely executed. Some have been uniformly reddened with ochre, others not so, and only rarely does a perforation exist. A few examples of both sticks and stones show unmistakeable signs of age in the smoothness of the surface or in the obliteration of the patterns by much handling. Examples of the stones are also shown on Plate VII.

While a section of the Horn Expedition was in the neighbourhood of the short but high range which has hitherto been designated as Haast's Bluff, but whose constituent peaks are now named Mounts Francis, Edward and William, we received information that a collection of these sticks and stones were concealed in a cave at a remote place called Kundŭnga, about ten miles due east of Mount Francis, and with some difficulty we persuaded our local guide to take us to the locality.

About half-way up the side of a rocky hill, about 150 feet high, was a small cave, in the fissile micaceous schist of which the hill was composed; this was about 8 feet deep, with a mouth of about 4 feet in width, and 3 in height. A ledge at the entrance had been made with a row of stones, and just within this were laid about 70 of these wooden and stone articles, 15 being of the latter character. All were placed with their long axes parallel, and these in the direction of the depth of the cave, the stones being undermost. The whole collection was

laid on, and also covered with, branches of Eucalyptus and Mulga. The concealment was perfect; beyond the fact that a small opening could just be seen to exist in the rocks when it was pointed out. There was nothing to indicate its purpose or to distinguish it in any way from numerous other similar cavities in the face of the hill.

The locality, I believe, lies within the territory of the Luritchas; our local guide was, at least, a member of that tribe; and I believe also that the collection belonged to the same tribe, but my uncertainties will be seen in anticipation when I say that I cannot even speak positively of the ownership of the articles in question.

There is, however, no doubt that the use of similar articles extends over a very wide range of Central Australia. They are common to the Arunta, Luritcha, Kaitish, Wolperi, Warramunga, and Waagai tribes; we have also in the South Australian Museum examples from some of the tribes around Lake Eyre; as far eastwards as the Frew River, and westwards from the Musgrave Ranges. Probably their range is still more widely extended though I am unable to define it. Wherever they are found they appear to be objects concerning which the same kind of mystery and concealment exists; they, particularly the stones, appear to be handed down as heirlooms, some, at any rate, are of undoubted age, though others are as undoubtedly of recent manufacture. They are reluctantly spoken of and parted with, and it was exceedingly difficult to extract any information concerning their significance or application. The usual manner of concealment in a remotely situated *cache* has been exemplified by the collection at Kundŭnga, and it should be added that the concealment and mystery as regards all this class of object are especially directed against the females who are on no account permitted to see them.

When, as frequently happens, the smaller and less important sticks of the "bull-roarer" type are kept in camp they are kept carefully wrapped up in a bag. While at Tempe Downs I caught sight of such a bundle in a native shelter, and after a great deal of persuasion induced the owner to part with it for a consideration, but before he would open the parcel he sent away all the women and children, and gave the sticks to me with strict injunctions not to let them be seen by any females.

As regards their import there is no doubt that they are in some way associated with certain ceremonies, and, so far, this information has been given us by Mr. Schulze, who speaks of them as "tjurunga arknanoa" (festival plates). The

difficulty however consists in determining what is the precise nature of that association, for from no individual could I obtain an answer to questions so directed, put them how I would.

I have already stated that, so far as I could discover, totemism does not exist in the Arunta tribe in the sense of constituting subordinate marriage groups within the phratry or subphratry. Nevertheless I have come to the conclusion, mainly through a consideration of these ceremonial objects, that the totemistic idea is fundamentally present, inasmuch as certain animals or other objects of nature appear to stand in some special relationship to individuals or groups of individuals, and the idea seems to come into play in the ceremonies to which the objects are attached.

According to Mr. Schulze,* certain individual elders of the tribe are the patrons of one or other of these various ceremonies, most of which seem to have reference to food products and particularly to the promotion of their supply, and it is these elders who have the privilege of giving the word for the performances of which they, so to speak, have the monoply. Few persons have been in so good a position to judge as Mr. Schulze, and what little I gathered confirms his statement in this respect. I am however inclined to think, though I have no absolute proof, that the association is still more fundamental, that in fact the object of the ceremony is really the totem of the elder who is patron of the festival and not of him exclusively, but of a certain group of natives who, with himself, are entitled to take part in it.

A reference to Mr. Gillen's paper will show that restrictions and monopolies concerning particular ceremonies do certainly apply to certain phratries, and I think it is extremely probable that the privileges of participating in certain other special festivals may be even still further restricted to smaller groups than the phratries or even the subphratry; to such a group perhaps the term clan may be properly applicable though I hesitate to use it in my present state of knowledge of the subject. If this is correct, one might expect to find that while all that concerned any particular ceremony would be very well known to a member of the group privileged to take part in it, there might equally well be ignorance of such matters on the part of one to whom these privileges did not extend. This is, in fact, just what happened when we found the collection at Kundŭnga. Before we started for the place our guide said that the sticks and stones belonged to the opossum festival, and when, on referring to him each article in succession,

* *Op. cit.*

he without hesitation assigned about two-thirds of them to various ceremonies, that of the opossum constituting the majority, but for the remainder he, after careful inspection of the patterns, said he did not know what they were—that they belonged to "'nother fellow blackfellow." The ceremonies represented to which names could be attached were, Sugar Ant (*Campanotus inflatus*), Euro (*Macropus robustus*), Opossum (*Trichosurus vulpecula*), Emu (*Dromœus novæ-hollandiæ*), Snake, sp., Mulga (*Acacia aneura*), Mŭnyeru (seeds of *Claytonia Balonnensis*).

I may add that other blacks also recognised the association of some of the articles but not of others. How so large a collection came to be hidden away together I could not ascertain, nor, as I have said, was it clear who were the real owners, but they appeared to be the common stock of a considerable number of natives and possibly of more than one tribe.

As to the manner of their employment I have already indicated that I could get no certain information; however, I am pretty certain that, of a great number, no specific use whatever is made, but that they are regarded as objects of extreme and perhaps supernatural value, the possession of which confers distinction, these qualities requiring that they should be kept carefully hidden away in places known only to privileged persons. Some, however, the very long sticks for instance, appear to be actually worn in the ceremonies with which they are associated. In the emu festival, for instance, I understood that the stick, suitably decorated, is fixed so that one end is in the groove of the spine, being attached to the body and head, while the other end, decorated with a bunch of emu feathers, projects far above the head; the idea being thus to intimate the long neck of the birds while appropriate movements are made by the wearer. In the figure representing the head of a man taking part in the Rain Dance by the Arunta natives at Charlotte Waters, the manner of wearing one of these elaborately decorated long sticks is shown (Plate VIII., Fig. 1). I have very carefully studied a considerable number of these sticks and stones, but have been quite unable to discern any association between the markings and the objects with which they are presumed to be associated; in fact nothing in the shape of an animal appears, except the sinuous outline clearly intended to be a snake on two or three of them. Doubtless, however, there is some such graphic connection even in respect of the geometric patterns. Mr. Schulze speaks of the markings as being understood only by the old man who has charge of the festival, the behaviour of the black at Kundŭnga indicated that they conveyed some information to him, and there was a general opinion amongst those conversant with the ways of the blacks that they had a very definite meaning. It was also definitely

stated by these that the markings represented a kind of programme of the festival, which is not at all unlikely. The perpetual recurrence of the concentric circles and arcs is very noticeable, as well as the general resemblance of many of the patterns. A perusal of Mr. Gillen's paper will indicate other occasions on which these sticks are used—notably in the ceremonies of initiation of young men, and, as is well known, the weird noise made by the bull-roarer is used as a signal. The whole question in all its bearings is one of great interest, and I trust that Mr. Gillen's later inquiries will throw more light upon the subject than I have been able to do.

It may not be out of place if, before concluding this section, I briefly allude to some stones of the Churiña class, of unusual form, which belong to other tribes of Central Australia. These are in the possesion of Mr. Gillen, to whom I am indebted for the opportunity of describing them, as well as for the following particulars :

Churiña of the Waagai.—Flat, generally oval slab of micaceous rock ($3\frac{3}{4}$in. by $2\frac{1}{2}$in.), margins on each side scored deeply with radially disposed cuts which, in some places, have extended to the whole thickness of the stone, thus allowing portions of the edge to break away, giving the stone an irregularly serrated outline. Incised patterns, chiefly concentric circles and arcs, on each side ; at one end a small round hole.

Churiña of the Waagai (believed to be their Fighting-stone).—A very dark brown, oblately spheroidal, waterworn pebble ($1\frac{3}{8}$in. by 1in.), which rests nearly buried in a small nest of loosely felted brown emu feathers. The surface appears artifically smoothed and polished, probably with much handling and grease.

Churiña (Poison-stone) *of the Kaitish* (*native name, I-turkwariña*).—Oval, flat, semi-polished disc of micaceous rock ($3\frac{1}{4}$in. by 2in.), with the edges probably, artificially rounded. Colour, dark slate with tinge of brown. To the smaller end is attached, by means of brown resin, a string of human hair. According to Mr. Gillen's account the stone is used as follows :—The stone being held in the palm of the right hand, the thumb of that hand is linked with the little finger of the left. The two hands thus linked together are held in front of the face and jerked three times towards the person whom it is intended to kill, an incantation being uttered at the same time.

Churiña (Fighting-stone) *of the Warramunga.*—A stone of somewhat similar character to the foregoing, but of smaller size. Colour, very dark brown or nearly

black. Covering the smaller end is a mass of dark brown resin to which, however, no string is attached. This stone is kept in a small nest or sheath of loosely felted emu feathers, and is thus carried into battle, where it confers strength and courage upon the possessors.

Poison Stone "Mau-ia."—A few small, irregular fragments of yellowish-white stone, none exceeding $\frac{1}{4}$in. in diameter, were given to me by Mr. Gillen, as well as the following details. Procured on the table-land country towards the Queensland border and supposed to possess lethal properties of a high order. When it is desired to give effect to these a fragment is placed on the blade of a spear or the end of a long stick and dropped on to the face or feet of the sleeping victim. The natives at Alice Springs are very much afraid of the powers of this substance. They would not handle it or even look at a little box in which it was contained. They themselves kept it wrapped up in abundant coverings of "paper-bark" (*Melaleuca*, sp.) and rags, and when they brought it to Mr. Gillen it was so covered up with wrappings that it formed a parcel the size of a pillow. This is said to be used by the tribes that lie to the east of the telegraph line, between it and the Queensland border.

On analysis, which was kindly made by Professor Rennie, these deadly fragments were found to consist of magnesian limestone.

Mr. Ravenscroft,* as far north as Newcastle Waters, has described under practically the same name, "Mowija," fragments of crystallised quartz to which similar properties are ascribed by the natives of that district. The horror of their supposed effects were manifested by the same fears and precautions.

In addition to the ceremonies mentioned above, as represented by the identified "Churiña" of the Kundŭnga Cave, I am also acquainted with articles of precisely the same general characters which were definitely assigned to the following ceremonies:—Wild-cat (*Dasyurus*, sp.), Eagle-hawk (*Aquila audax*), Hawk, sp., and "Witchety" (see section on Animal Foods). I have, moreover, heard of a similar association in the case of Wallaby and Fish, and in all probability many other animals are similarly represented.

Camps.

At various points on our journey a considerable number of natives were congregated. Such was the case at Crown Point, Tempe Downs, the Mission Station

* Some Habits and Customs of the Chingalee Tribe. Trans. R. Soc. of S.A., vol. xv. The habitat of this tribe should, however, be Newcastle Waters, not Charlotte Waters as there appears in error.

and Alice Springs, all of which, it will be observed, are settlements of the whites either for pastoral or telegraphic purposes. Their camps are frequently situated in a river bed the soft sand of such localities being, no doubt, the attraction. Our experience, however, of the extreme cold of the relatively low-lying river-beds led us to select in preference the higher, if harder, ground of their banks. As frequently happens in the dry regions of Australia it is the advantages offered by the presence of permanent water that has been the prime inducement to select a particular locality for a settlement both by whites and blacks, and in the case of the latter, the presence of the white man offers additional inducements in the way of gifts or unconsidered trifles of food.

During the day many of the men are away on their hunting expeditions, and the women in search of vegetable food, but still we always found a good many of both sexes in camp all day—the men almost invariably idling, but the women often engaged in grinding seeds. As we found them, under these circumstances, they were usually to be seen scattered about in small groups, the adult men by themselves and apart from similar groups of women and children, there being, however, relatively few of the latter.

As Mr. Gillen points out elsewhere the etiquette of the camp is strict in the matter of separation of the sexes, as well as in that of the assignment of special limits to the different social divisions. No one can avoid noticing the separation of the sexes, but it requires some knowledge of the constitution of the group to recognise the delimitations of the social divisions, and I must refer the reader to Mr. Gillen's remarks on this matter.

At Crown Point and the Mission Station, a few low and imperfect shelters of boughs or salsola bushes thrown together gave very little protection against the weather. At Alice Springs these shelters were somewhat more carefully constructed and their efficiency consequently improved, but at Tempe Downs the natives slept without a vestige of either shelter or covering, and this at a time when the night temperature sometimes fell below 20° F. In some localities, such as Gill's Range and the Mission Station, we found abandoned habitations of a better class constructed of boughs with sufficient care to afford considerable protection, but at the latter place, as already stated, the natives preferred to use their almost shelterless camps in the bed of the river. At night the single individuals, male or female, sleep side by side, in their separate camps, with a small fire between each body, which is kept burning all night. I often noticed that natives would rather get up in the night-time to gather a fresh supply of wood than take the trouble to

provide themselves sufficiently before going to sleep. A married couple sleep together with a single fire, or with one on each side in cold weather. Thus, in recently abandoned camps, by the relations of the hollows in the earth, which mark the portions of the bodies and of the fires it was not difficult to judge of the domestic status of their former occupants.

Most frequently we found the blacks sleeping without clothing or covering of any kind; occasionally, however, a blanket was to be seen in their possession. One morning, at Crown Point, two adults, a boy about 15, a "picaninny" and five dogs were observed, by a member of our party, emerging from beneath a single blanket under which they had all been huddling for the night. On other occasions, also, we observed the attempt to promote mutual warmth by close contact of the bodies.

It is a very singular fact that, in an elevated region like that of the McDonnell Ranges, where the nights are always, and the days often, very cold for several months in the year, no attempt whatever is made to utilise, as clothing or covering, the really excellent fur of the Euro and Rock Wallaby, which are fairly abundant amongst the hills. Not only would these animals provide the pelts, but in the sinews of the tails, which they use for other purposes, they would have excellent sewing material. Rather than use the skins for such a purpose they prefer to cook the animals whole, and consider the hides amongst the edible portions. Mr. Gillen tells me that, in former times, the Arunta natives used to make bags for carrying water out of skins, but I have never seen an example from this locality, though we have them at the South Australian Museum from Western Australia. This neglect of natural products contrasts with the practice of various tribes in more southern portions of the country, where beautifully made opossum fur rugs used to be made in the days before the natives came to depend on the issue of Government blankets.

Fire-Making.

Though I did not see this performance in Central Australia, many of the soft-wooded shields of Erythrina wood bear charred grooves, which are evidently the result of efforts to produce fire by the ploughing method of friction (Plate V., Fig. 11*a*). The hard-wood with which these grooves are made is, I believe, a piece of dry Mulga. In no case did I observe such marks as would be produced by the rotatory method, although I was informed that this also was used. The dry, pithy flower stems of the grass tree (*Xanthorrhœa*), which grows in a few

parts, forms an excellent material for purposes of fire getting in this way and may be thus employed, as it is in other parts, though I never heard of its being used in this way in the districts visited.

When once fire has been obtained, great care is taken to preserve its continuity by carrying firesticks from one place to another and we occasionally saw natives with these in their hands.

Visiting.

A considerable amount of formal, not to say ceremonial, courtesy exists amongst the blacks. One day, when in their camp at Tempe Downs, two of the natives, stated to belong to the locality, arrived from the Mission Station. The new arrivals approached silently, without word of speech or sound of recognition on either side, and sat down about twenty yards from the home camp, still without a word being spoken. After an interval of two or three minutes, a man of the home camp joined the new-comers and sat down by their side, when conversation between them began in whispers. Others then approached and joined in the conversation, which now became general and was carried on in ordinary tones.

I was given another and somewhat different account of the etiquette of visiting amongst the blacks of the Hugh River, who belong to the Arunta tribe. In this there was mention of the same silent arrival and halt at some distance, but the first act of recognition of the new arrival was the sending over of a lubra to the visitor to light a fire, which is done with averted looks on either side. Gradually the members of the home group go singly to that of the visitor and in course of time the latter, if a male, finds his way into the camp of the young men, where, being seated, he sticks a ceremonial stick into the ground in front of him as a sort of credential, and enters into conversation. A corrobboree in the evening usually follows in honour of the event.

Games.

Though we never saw them being actually used in play, I frequently saw in native camps broken examples of the long, slender sticks, terminating at one end in a fusiform knob, used for playing a game of competition (Plate V., Figs. 3, 3*a*). In this they are whirled round and thrown with an underhand movement, whereby they are made to shoot along the ground for long distances, travelling with a peculiar serpentine motion.

I also saw them spinning water-worn, round pebbles on the bottoms of inverted "billy-cans," but I saw none of the beautifully balanced tops moulded out of clay and provided with a peg, which the natives in the north-east of South Australia proper (Blanchewater) spin, in competition against one another, on some smooth surface such as a piece of tin. At the locality mentioned I saw one spun by a lubra remain rotating, or as boys would call it "asleep," for four minutes, and even this period I believe can be exceeded.

On a sandstone bluff abutting on the Finke near Crown Point, Professor Tate, in the course of one of his geological excursions, noticed on a small plateau small rounded boulders arranged so as to form avenues several yards long and about a yard wide. These, we were told, were made by the boys in play, and I have heard of the same kind of practice in other localities, though I have no knowledge that it is associated with any definite game.

Smoke Signals.

A good deal of discussion has recently taken place in the press of this colony, as the result of a paper on "Smoke Signals" contributed to the Adelaide Meeting of the Australasian Association for the Advancement of Science, 1893, which affirms that the natives have what may be called coded signals, whereby sundry information can be, and is, transmitted for long distances by means of smokes of different characters.

I made many inquiries on this subject when on the Horn Expedition, but could gain no information which supported Mr. Magarey's contention. Of course smoke signals are greatly made use of, but if for a special purpose, they are prearranged, and of the simplest character. Our guide Harry, a tracker in the service of the police, said that in his tribe (Arunta) two simultaneous smokes were regarded as the sign of a camp, and four as that of a permanent camp, but I have reason to doubt whether even this limited code is in force generally. Beyond that due to the number of smokes there is no doubt that some degree of variety in the signals is possible by reason of the character which they can be made to assume according to the material consumed. And one may say this without admitting the numerous varieties which seem possible to Mr. Magarey. For instance, we had the occasion to observe daily the characteristic evanescent puffs arising from the ignition of clumps of the inflammable Porcupine grass (*Triodia*), which could nearly always be recognised as something different from the smoke of burning scrub. But admitting the possibility of variations in the character of

smokes, even within a limited degree, the point is whether these variations are made use of to constitute an accepted code which is understoood far and wide, and, of this being the case, I could gain no evidence whatever, either from the natives themselves or from whites who had had long experience of their ways.

Weapons.

Spears (Plate V., Figs. 1, 1*a*, 1*b*, 2 and 2*a*).

Two kinds of spears are in common use, one unbarbed, the other with a single wooden barb; in other respects they are similar. The shaft of the best specimens is made out of a single piece of the light yellow wood of *Tecoma Australis*—a rock-loving shrub of semi-climbing habit whose long and nearly straight shoots, of approximately the right thickness, are admirably adapted for the purpose. These are decorticated and further straightened by heating and by judicious manipulation. They are then trimmed and scraped smooth, the natural gentle taper of the shoot, from butt upwards, being preserved. The blade, always in these spears a separate piece, of a long lanceolate shape, from 10 to 15 inches in length and from an inch to an inch and a quarter wide, is made out of the hard heart-wood of Mulga (*Acacia aneura*). Usually one surface of the blade is more convex than the other, though sometimes both are equally convex. It is affixed to the shaft by an oblique junction of the kind known technically as a plain scarf joint, being first made to adhere with a thin layer of Triodia resin and then the junction is firmly bound round with kangaroo tendons. Apparently from want of shoots of sufficient length, it is rarely that the shaft consists of a single piece; in nearly all cases from one to three feet of the tapering tail end is a separate piece affixed in the same manner as the blade. At the extreme end is a small pit to receive the point of the throwing stick. Cracks are filled up with resin and bound round with tendon.

The barbed spear (Plate V., Figs. 1, 1*a*, 1*b*) differs only from the above by the addition of a single, slightly curved barb of hard wood, about three inches in length, stated to be that of *Cassia eremophila* or of *C. Sturtii*. This is neatly and firmly bound to the blade with tendon in the manner shown in the figures, so that about half its length projects as a barb, the tip of which is distant from six to eight inches from the point of the spear. In these weapons that surface of the blade to which the barb is attached is only very slightly convex, while the other is more so.

The great majority of spears seen on the journey were of one or other of these two kinds. In a few, however, of very similar appearance, the shaft was

made of some other wood than that of *Tecoma*. Of a similar yellow colour these are lighter in weight, usually rather thicker, of straighter grain and with fewer knots than the Tecoma spears, but in other respects the construction is the same, and like these they may be barbed or unbarbed.

I noticed that while the spears from Alice Springs were mostly made of Tecoma, a considerable number of those at Tempe Downs were of the other lighter kind of wood, which I have not been able to identify.

What little ornamentation existed was simple and rude, and confined to a length of about a foot behind the junction of the blade with the shaft. The usual pattern took the form of sinuous bands made up of short transverse notches beginning and ending with a collar of several closely approximated incised rings. The blades also frequently bore variously arranged groups of roughly made short notches or cuts, which looked as if they might be tales of some kind, though, in some instances, these marks were arranged in definite circles as if intended for ornament. A few spears from Alice Springs showed, on the shafts, traces of dark spiral bands, probably of old blood.

The above types of spear, which have a very wide range in Central Australia, being met with everywhere, are used for both fighting and hunting, and are thrown with the throwing-stick. Each native generally carries from one to three. The range for accurate use is not more than about 50 yards as we had opportunities of seeing, though they can be actually thrown to a much greater distance. The native name for both these kinds of spears as given to me was "Rángera."* At Alice Springs it is "Ilcherta."

Another kind of spear, or rather lance ("Tajunja"), not very frequently seen was made of a single piece of some hard wood variously stated to be a kind of Mallee (*Eucalyptus*, sp.), Mulga (*Acacia aneura*), or *Acacia doratoxylon*. These were rather longer than the preceding forms, reaching to a length of about 10 feet, with the blade moiety long and about an inch and a half wide. The shafts, still showing some of the natural curvatures of the wood, were marked with wide or narrow longitudinal facets or flutings, made by the instrument by which they had been pared down. No pit existed at the tail end, from which it is to be concluded that when thrown it is by the hand alone. These spears are nearly always heavily red-ochred all over, and the blade often bears transverse bars of yellow ochre extending for 18 or 20 inches from the point.

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* The native names in this section are from the Arunta tribe.

Lastly, one or two examples were obtained of a fine, long, broad-bladed lance, thicker than any of the preceding, and having a fair polish, which is made out of a single piece of the heavy, dark heart-wood of the Desert Oak (*Casuarina Decaisneana*), Plate V., Fig. 2. This form is rare and, I believe, is of some ceremonial importance. I was told, in fact, that it is stuck into the ground, blade uppermost, to serve as a central point in certain corrobborees, but I have no certain knowledge on the subject.

Spear-throwers.—"*Ámera*" (Plate V., Figs. 10, 10*a*, 10*b*, 10*c*).

One type only is used in the regions visited, viz.:—a broad leaf-shaped instrument which is not only used for throwing the spear, but serves many useful purposes as a working tool.

In form they are of an elongated ovate or often spathulate shape, suddenly tapering at the distal end to a blunt point, and at the other more gradually to a conveniently sized flattened haft. The length is from 22 to 30 inches, and the width from 4 to 6 inches. In section they vary from being nearly flat to a considerable degree of tranverse curvature, the more concave examples sometimes showing by the stains that they have been used as blood receptacles. The most carefully made specimens are smoothed to a uniform surface on both sides, but more generally they retain the groovings or facets of the tools with which they have been made. Most of them are red-ochred all over; one, only, from Tempe Downs had a single ornamental pattern of three concentric circles on the concave surface. The wood used appears to be Mulga. To the extreme distal end a recurved point is firmly affixed with Triodia resin and tendon in the manner shown in Figs. 10*a* and 10*b*, which fits into the pit at the tail end of the spear when used for throwing purposes. This is about an inch and a half long, and about half its length is free. It is made of some hard yellow wood, the same probably as that used for the spear barb.

To the extremity of the haft and almost completely embedded in a mass of Triodia resin, by which it is affixed, is a chisel-edged stone chip of more or less opaline quartzite,* having its edge running in the same plane as the width of the wooden body, and projecting beyond the resin only to the extent of about a quarter of an inch or even less. In a chip removed from the resin the working part is wedge-shaped in section and has one surface—that corresponding to the

* For the diagnosis of the mineralogical characters of the various stone articles I have to thank Professor Tate, and Mr. Turner, Demonstrator of Chemistry in the Adelaide University.

convex surface of the thrower—consisting of a single conchoidal facet; the opposite surface shows small irregular facets of a similar conchoidal character. The actual edge is straight, in this particular instance, showing only the slight irregularities of fracture, and the transverse section of the working part, broadly speaking, resembles that of a thick morticing chisel. In the example figured the edge is not so even.

This implement was carried by nearly every adult male together with his spears, and was the only working tool that I saw in the hands of the natives during the Expedition with the exception of a few—very few—stone knives and two chisel or adze-like instruments that will be afterwards described. The spear-throwers are certainly used for comparatively light work, such as paring the spears themselves, for I saw this being done, but whether they, or the stronger and heavier adzes, are regularly employed for severer work such as the manufacture of hard wood food and water vessels ("Pitchis") I cannot say.

Shields—"*Ulkŭta*" (Plate V., Figs. 11 and 11*a*).

All the shields observed and collected during the Expedition were made of the soft wood of *Erythrina vespertilio* so that the same remark as to their importation into the district applies to them as to the "Pitchis" made of the same material *vid. infra.* They are all of the same oval shape, though they vary in size and in the degree of convexity of the outer, and of the concavity of the inner, surface. The smallest of those collected was $22\frac{1}{2}$ inches by 7 inches, and the largest 31 inches by 10 inches. The length of the bar, serving as the haft, did not exceed in any case $3\frac{3}{4}$ inches, and was, in many cases, still shorter while the subjacent hollow was correspondingly small. As previously stated these facts afford an indication of the small size of the native hands. Almost all were uniformly and copiously red-ochred all over, and two from Alice Springs showed signs of having been used as receptacles for blood. In fact we saw them so used. Several also showed charred transverse grooves on their convex surface, the result of their having been used for the production of fire by the ploughing method. Cracks, in some, had been mended by splicing with tendons, and in one a considerable depression had been neatly filled up with Triodia resin. The black cross-shaped patch, shown at the lower part of Fig. 11*a*, is a mass of the same resin stuck on for some unknown reason.

Boomerangs—"*Uramanja*," "*Marĕwurra.*" (Plate V., Figs. 7 and 8).

The boomerangs in common use ("Uramanja") throughout all the regions visited are about 28 inches long and $2\frac{1}{2}$ inches wide and are characterised by a

very open curve. In some the curve is symmetrical, in others it is unequally divided between the two halves, one being nearly straight while the slight degree of curvature that exists is confined to the other segment. They are usually thick and heavy, and, for the most part, clumsily made, some of them undoubtedly with European tools. Usually one surface is flat, the other convex, though, in some, both are equally convex. Hardly any trace is evident of the slight spiral twist which is characteristic of those light blade-like boomerangs of which the peculiar returning flight, when properly thrown, is so well known. In fact these missiles, common to Central Australia, are not intended to return in the same way, but are thrown with a view of striking the object directly or after a first rebound from the ground. The ends are rounded, less frequently somewhat pointed and, in the majority of cases, the only markings are fine or coarse parallel groovings conformable to the curve, which are sometimes confined to the convex side. Sometimes, however, there are ornamental patterns and all are, or have been, uniformly red-ochred all over; one or two also show at the distal end traces of transverse bars of white or yellow pigment, with which they are decorated on special occasions. The wood appears to be Mulga, or possibly that of allied acacias.

From about the size just described others occur forming a series of gradually increasing lengths, the larger sizes being known as "Maréwurra." The longest collected on this journey was 4 feet 2 inches in length, though they may exceed this considerably. I believe the very large forms are importations into Central Australia from regions more to the south, notably from the country around Lake Eyre.

With the increased length there is usually but slight corresponding increase of breadth, though the thickness may be considerably greater, and these large forms are usually convex on both sides. Those too heavy for throwing, up to a certain size, are used either as single or double-handed swords or clubs, but I have reason to believe that the very long ones—those reaching a length of five or six feet—have some ceremonial importance, though I am ignorant of its nature. The large sizes bear the same kind of longitudinal parallel facets or groovings as the smaller varieties, but these were generally more finely executed in the former than in the latter. One of the latter, collected at the Mission Station, but stated to have come from the Barcoo district (which is probable), showed a definite pattern composed of lines grouped into bands and short bars.

Beaked Boomerang—"*Irawa-ilpákata.*" (Plate V., Fig. 9).

There is another missile weapon of the same class as the boomerang which is occasionally met with amongst the blacks of the McDonnell Ranges, though I believe

it is not a product of that part of the country. This has the general shape of one of the ordinary short boomerangs, in which the curve is very open and confined to one limb, but in addition there projects from the convex edge, at the end of the curved or distal moiety, a spike or beak flattened in the same plane as the body of the instrument, which is evidently fashioned out of a small branch (or root) which sprang at a suitable angle from the stem out of which the curved part was hewn. This beak makes an angle of about 80 degrees with the body and is, in the specimens collected, from $4\frac{1}{2}$ to 5 inches long, with a width of $1\frac{1}{2}$ to $2\frac{1}{2}$ inches at its point of origin, thence tapering to a width of an inch or less at the point which is rounded. The wood resembles that of Mulga or some other acacia in its combination of light yellow alburnum and dark brown heart-wood. The more convex side only shows longitudinal groovings which are continued on to the beak. All are red-ochred uniformly.

The first specimens of this peculiar weapon which reached the South Australian Museum were discovered in 1884 by Captain Carrington of the s.s. *Palmerston*, in a cave in a sandstone hill on the western shores of the Gulf of Carpentaria,* and were afterwards presented to the Museum by F. J. Sanderson, Esq. Subsequently, during an overland journey from Port Darwin to Adelaide, I found that they were in use amongst all the tribes, north of the McDonnell Ranges, through which we passed and were especially common amongst the Daly Waters tribe. We have also some examples from as far south as the Peake Station. I believe it is a northerly form of weapon which only finds its way south by importation. Many of those seen north of the McDonnells, in addition to the general red-ochre colouration, had the beak and adjacent part of the limb from which it springs decorated with patterns of white or yellow pigment.

I was informed that this implement is thrown from the hand like the ordinary boomerang, and I could not gather that any special use is made of the beak, which indeed must be extremely liable to be broken off when used in this way.

Missile Sticks (Plate V., Figs. 4–6).

Under this head may be included a group of missile weapons which are interesting as showing, in the most direct way, a transitional series from a perfectly straight cylindrical stick to the distinct, if sometimes slight, curvature and flattened sides of the boomerang (*vide* Figs. 4–8, Plate V.)

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* Rivers of the Northern Territory of South Australia. Captain Carrington. Transact. Geograph. Soc. of Australasia, South Australian Branch, 1886.

The initial form of the series, a simple straight rounded bar of wood, "Tura," with bluntly-pointed ends 32 inches long, and $1\frac{1}{8}$ inch thick. Other forms in the series show at first a slight, and then an increasing, curvature in a similarly rounded bar, but as the curvature increases the section becomes oval instead of circular, and finally the marked curvature and definite flattening of the boomerang is reached. The curved forms are called "A-chingona." These missiles, in the collection made, vary in length from 26 to 32 inches in length. For markings beyond the longitunal flutings or facets of manufacture they show a few roughly made (often obviously with a knife) transverse cuts or rings at one or both ends.

Fighting Club.

A single example of a fighting club was given to me by Mr. Gillen. This is a straight, round, heavy bar of some hard wood, 4 feet 2 inches in length, and two inches in diameter, with bluntly conical ends. At one end, presumably the haft, there are long shallow groovings extending for about eight inches. This weapon is not a product of the McDonnell Range natives, but belongs to more northerly tribes, certainly to the Warramungas at Tennant's Creek, and possibly to others; but, as it occasionally finds its way south, I have included it amongst the weapons of the region of which I write.

Pick-shaped Weapon.

Another implement which occasionally makes its way from more northerly parts to the McDonnell Ranges, is a pick-shaped implement, which is used as a weapon of offence. In this a lanceolate and usually trigonal blade of quartzite, similar in size and shape to that of the stone knives (*vid. infra*), is affixed at right angles, by means of Triodia resin, to the end of a wooden handle of about 2 feet in length. In another form the handle is formed of a piece of wood split longitudinally and bent double, the blade being fixed in the bight by the same means.

Domestic Implements and Utensils.

Adze (Plate VI., Fig. 12).

The combination of spear-thrower and chisel, or adze, has been mentioned as being the working tool most frequently seen in the McDonnell Range district.

Occasionally, however, another implement is met with, which, so far as I know, is only used for utilitarian purposes, though it has been mentioned as serving as

an effective missile.* This has been termed both a chisel and a gouge, but, perhaps, in view of the manner in which it is used, adze would be a more appropriate name than either.

The usual form consists of a chisel-edged chip of opaline quartzite or other hard stone affixed by means of Triodia resin to a nearly straight or more or less curved handle of hard heavy wood.

The following is a description of a specimen from Alice Springs in the possession of Professor Spencer (Plate VI., Fig. 12) :—

The handle is a nearly straight piece of hard heavy wood, probably the heart-wood of a species of acacia, having a diameter at the middle of $1\frac{3}{8}$ inch, thence tapering very slightly to each end. The surface is scored with well-marked longitudinal parallel grooves to within $2\frac{1}{2}$ inches of the commencement of the mass of resin, and on this remaining portion of the handle—that which is grasped by the hand—are roughly made notches, arranged so as to form spiral lines; these are partially obliterated by the polish of long usage. At the other end some indistinct scratches form an annular band, which do not appear in the figure. The mass of Triodia resin, in which the chip is imbedded, is about $2\frac{1}{2}$ inches long by 2 inches wide, and $1\frac{1}{4}$ inch thick at the thickest part.

The cutting edge is provided by a chip or flake of opaline quartzite, which is so embedded in the resin that a small working part, only, is exposed. This has a bevelled and a straight side like a carpenter's chisel. On the bevelled side a width of $\frac{3}{8}$ inch is left uncovered by the resin mass, rather less on the other; and, on the latter, which is that held towards the person in using the implement, the resin is massed rather more thickly than on the former. The cutting edge is finely serrated, nearly straight, and $1\frac{1}{2}$ inch in width, though behind it the chip is somewhat wider. By the colouration of the surface of the fine serrations it would appear as if the edge had been recently improved by careful chipping.

The total length of the implement is 30 inches. It will be observed that in this case the handle is practically straight. This seems exceptional for, in a large number of these implements in the South Australian Museum, collected from many parts of Central Australia, some, often a considerable degree of curvature is present in the handle, and this is in the plane at right angles to that of the cutting edge of the flake. So also, while the degree to which the flake is exposed is very variable its edge is usually not straight but arc-shaped. No specimen in the Museum, moreover, is as long as that described.

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* "Aborigines of Victoria." R. Brough Smyth, vol. i., p. 340.

An unusual form of this implement from Northern Queensland, in which the curvature of the handle lies in the same plane as the cutting edge is described by Mr. Etheridge,* who prefers the name "gouge."

In working, this implement is used in the same kind of way as the spear-thrower, that is, it is grasped with one hand just above the mass of resin with the concave surface of the handle, where this is curved, towards the person and the strokes are made in the same direction. For heavy work its weight and solidity give it an advantage over the lighter instrument previously described.

On a previous trip I saw many such tools amongst tribes to the north of the McDonnells, but in the districts visited by the Horn Expedition I did not see a single example of the genuine article in the hands of the natives, though they are undoubtedly used by them. We have them also from Western Australia and from districts towards the Queensland boundary, so that their range is undoubtedly wide. As a working tool its place, in the McDonnell Ranges and to the south, seemed to be taken by the spear-thrower, which was found in the hands of nearly every adult native. Two examples, however, were collected of the same kind of implement, in which a piece of flat iron had replaced the stone chip, thus making a more efficient tool, though, one which had lost the charm of a purely native product. This chisel end, from its appearance and slight curvature, may be presumed to be a piece of a wheel-tyre.

In one of these from Alice Well, on the Finke, the accidental removal of a portion of the mass of Triodia resin permitted it to be seen that the piece of iron rested on a notch cut out of the convex side of the handle (Mulga), to which it had been first secured by kangaroo tendon before the application of the resin. The other, presented to me by Mr. Gillen, was of finer workmanship, the handle being of smooth and well-polished Desert Oak, the junction of the blade with the haft being completely concealed by an unusually large mass of resin, 4 inches long by $2\frac{1}{2}$ inches broad, which was more protruberant on the same side as the concavity of the handle.

Some interesting notes might be written of the various adaptations to native purposes of the materials of civilisation. I will here only mention one other as appropriate to a region traversed by the telegraph line. Considerably to the north of the McDonnell Ranges the natives have learned to utilise the porcelain insulators for the manufacture of very beautifully made spear-heads; these are not necessarily robbed from the poles for many are broken by lightning and the pieces can be picked up in quantities.

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* Proc. Linn. Soc. of N.S.W., vol. vi., 2nd series.

Yam-Sticks.

Though the "yam" is not found south of the McDonnells, I retain this well-recognised name for the plain straight sticks of varying lengths used for digging purposes.

Those I saw were simple straight stems of some wood, externally light coloured (probably Mulga), with the branches roughly trimmed off. At one end they are brought to a chisel edge, such, in fact, as would be produced by a straight cut made obliquely through the stick. This working end is hardened by fire.

These yam-sticks are used with great dexterity, and it is astonishing with what rapidity underground animals are dug out of their holes by their means, the shallow hard wood "Pitchis" being used as scoops for the loosened earth.

Stone Knives—"Appŭrta" (Plate VI., Figs. 1, 1*a*).

Besides the chisel-ended spear-thrower, the adze and one heavy water-worn diorite pebble, split so as to present a sharp and somewhat pointed edge, which I saw being used in the hand to cut steps in a gum-tree, the only other stone implements seen in the possession of the natives were stone knives. They were, however, very infrequently met with, many of the natives having acquired possession of sheath knives of European manufacture.

These native knives are of a well-known pattern, consisting of lanceolate blades of (in the great majority of cases) the quartzite of the desert sandstone, from about three to six inches in length, and from one and a quarter inches to two and a half inches in width. Usually, as in the specimen figured, Plate VI., Fig. 1*a*, the blades are wholly or mainly trigonal in section, with one very obtuse and two acute angles, the fracture-surfaces being subconchoidal or nearly plane. Occasionally, however, while one side consists of a single surface, that opposite to it shows three elongated facets, making the section tetragonal—such, in fact, as would be produced if the small triangular facet shown at the base of the blade in the figure were extended to the point.

The haft is either a more or less oval, flattened mass of superficially red-ochred Triodia resin, into which the base of the blade is set, the other extremity being well rounded, or, as in the specimen figured, additional length is given to the haft by the insertion into it of a flat quadrangular piece of wood, which is generally variously decorated with coloured pigments, especially in the examples

from the country north of the McDonnells. In this case the pattern is in black and white on a yellow ochre ground-work.

The knives are carried in a sheath of the paper-bark of a species of Melaleuca,* which is sometimes, as in this example, stiffened internally with longitudinally disposed loose grass stems, while externally the papery-bark of the sheath is held together by being closely bound round with fur-string, thickly smeared with white clay (kaolin). When carried on the person the knife, in its sheath, is worn in the waist-band. In some of the best examples of these knives the tip of the sheath is ornamented by a small plume of feathers. In that figured, this plume has been made by tying, with sinew, the points of fine underfeathers of the emu to the end of a short thin stick, which is thrust into the tubular point of the sheath, the feathers only appearing externally. In this case they are so arranged that they radiate starwise, quill end outwards, from the tip of the sheath at right angles to its long axis. In another example in the S.A. Museum from Barrow Creek, the plume is the crest of Leadbeater's Cockatoo, which is tied to a stick in the same way, but the feathers form a simple bundle and do not radiate in the same way as in the specimen described. Probably, when originally made, the sheaths of all the knives possess a similar appendage which gets lost in the course of use. Total length of specimen figured, 10 inches; blade, 5 inches; greatest width of blade, $2\frac{1}{2}$ inches. Knives of this character are found amongst all the tribes from the McDonnell Ranges to the Katharine River and they have a wide range also to the east and west. A very similar knife from Western Queensland is figured in "Among Cannibals," Lumholtz, page 48.

There is one peculiar point about these knives, of which I have examined a great many authentic specimens, in that hardly any of them show any signs of having been used, either by the wearing or chipping of the edges, or by the staining of the surfaces. It is hardly to be believed that the native is careful to keep his knife clean, so that it appears to me, that they are carried more for ornament than for use, and, in fact, I never saw one being used. I understand from Mr. Gillen that small sized knives of this character are used in the initiatory rites. Only one implement, however, comes to me as having been thus employed. This consists of a thin short lanceolate blade of light green bottle glass, with one flat and one very slightly convex surface; but the tip, in place of being pointed like the stone knives, has a rounded contour, and both this and the lateral margins have a very even, thin and keen cutting edge. For handle the base of the blade is fixed into an oval mass of Triodia resin, flattened, conformably with its surfaces, and

* Probably *M. leucadendron* or an allied species.

uniformly red-ochred, while the blade itself shows traces of having been ornamented with alternate transverse bars of red ochre and white clay. Total length of instrument, $3\frac{3}{4}$ inches; of blade exposed, 2 inches; width of blade at base, $1\frac{1}{4}$ inch.

Stone Chips.

At various points on our route, which had evidently been old camping places of the natives, sundry stone chips were collected. These were either incompletely finished articles or the *rejectamenta* and failures in the process of manufacture. Some—the majority—it was easy to see, had been designed to be chisel-ends for spear-throwers or for adzes (Plate VI., Fig. 13). In other cases I am obliged to rely on the diagnosis of our black tracker who referred them variously as having been intended for the purposes of skinning animals, scarring of the body, cutting one another in play, scratching marks on weapons and making of spears. The materials of which they are composed are sandstone-grit, brown, yellow and buff jasper, chalcedony, quartzite, porcellanite and bottle-glass. The localities at which they were obtained were Adminga Creek, Dalhousie Springs, Charlotte Waters, Hughes's Water-Hole, Laurie's Creek and Deering Creek, where they were picked up either on the site of old camping ground, or in places which had served for their manufacture.

Stone Axe or Tomahawk—"Illipa."

No specimen of this kind of implement was collected or seen in the hands of the natives throughout the trip, but Mr. Gillen informs me that this implement is used in the Arunta tribe, and that the material of the stone head is diorite. The method of hafting is probably the same as that which exists to the north of the McDonnell Ranges, in which a flat oval pebble, more or less ground and polished to an edge, is gripped in the bight of a lath of flexible wood bent double. The two moieties of the handle are clamped together by whipping them with cord close up to the head, and again at their free ends. Additional fixity is given by the use of Triodia resin as a cementing substance both between and in a mass over the surfaces of contact of haft and head. We have axes of this pattern in the South Australian Museum, from Barrow Creek (180 miles north of Alice Springs), and from thence northwards to Port Darwin.

Water and Food carrying Utensils—"Pitchis" (Plate VI., Figs. 2 and 3).

I do not know the origin of the name "Pitchi" which is in general use, by the whites of the parts traversed by the Expedition, for the wooden vessels used for carrying food and water and, occasionally, infants. It is probably a native name

belonging to some other locality which has been imported into these districts, and is well understood by the blacks though it is not a word of their language. They are made of two different kinds of wood—one is that of Stuart's Bean Tree (*Erythrina vespertilio*), a very soft wood; the other that of some kind of hard wooded Eucalypt, probably *E. rostrata*. In each case they are cut out of a solid piece, a task which, in the case of the hard Eucalyptus wood, must involve considerable labour. Both kinds show the groovings of the implements used in their manufacture which are either narrow or wide, finely or roughly made. Those made of Erythrina wood ("Uritcha") (Plate VI., Fig. 3), though varying much in size, were all of the same pattern, being boat-shaped with rounded or, to use a nautical term, flambowed ends. Further to the north another pattern exists with the ends resembling the bow of a straight stemmed boat. The largest collected was 22 inches long by 6 inches broad, and the smallest 14 inches long by $4\frac{1}{2}$ inches broad.

As the Erythrina tree does not grow south of the McDonnells, these vessels must be imported into the region of which I write.

Of the hard-wooded Pitchis ("Tanna" or "Tunna") two patterns also were met with—one trough-shaped, with the longitudinal contour much curved and the ends consequently so much turned up that it is capable of carrying water (Plate VI., Fig. 3); the other having the longitudinal contour of the bottom only slightly curved, and the ends therefore open. The shape of the latter vessel is, in fact, such as would be produced by bending towards one another the sides of a very slightly concave oval tray. This form is only adapted for carrying solid substances. The largest of the hard-wood pitchis was $30\frac{1}{2}$ inches by 11 inches, and the smallest $14\frac{1}{2}$ inches by 7 inches. Larger sizes are, however, made. When being carried they are frequently slung over the shoulder of the same side with a sling made of a long length of human hair-string coiled into a hank of some 30 or 40 strands, and from 18 inches to 22 inches in length between the extended bights. This hank is loosely served (*vid. infra* "Head-rings") so that it forms a rope-like ring, one loop of which rests on the shoulder of the same side, while the pitchi rests in the other.

Grinding-Stones.

A good specimen of the nether- or bed-stone, used for grinding seeds, which was found in an abandoned native camp at Gill's Range, is an irregularly quadrangular flat slab of ferruginous sandstone, 2 feet long by 14 inches in the widest part and about 2 inches thick. On the working surface two nearly parallel elliptical shallow depressions have been worn by use, and in some

specimens these grooves have been worn nearly through the whole thickness of the slab. The hand-stones are either water worn pebbles or conveniently sized blocks usually of a more or less dense sandstone, and many of these have been worn by constant friction into flat thin slabs. One such stone collected at Tempe Downs was a spheroidal quartzite pebble, the white colour of which probably formed an attraction.

As suitable bedstones cannot be everywhere obtained they are carried from camp to camp often for long distances; the hand-stones, however, can be picked up anywhere and were frequently found lying about in abandoned camps.

Native Spindle (Plate VI., Fig. 10).

This simple apparatus was frequently seen in the native camps; its construction is as follows:—Two thin sticks from 6 to 7 inches long and curved so as to form arcs are cleft at their centres and placed at right angles so that the clefts correspond. Through the clefts passes a slender straight shaft of about the same thickness as the cross-pieces, the proper position of the latter being at a point considerably nearer one end of the transfixing shaft than the other, and their concavities being turned towards the shorter moiety. By rotating the instrument in the axis of the straight shaft the loose hair or fur is first spun into a simple strand which is wound, as it is made, in figure of eight fashion upon the axis and between the curved cross-pieces; by the twisting together of two such strands the string in ordinary use is produced. The rotatory movement is given by twirling the spindle upon the thigh with the palm of the hand. Another pattern exists (Tempe Downs) in which there is only one curved cross-piece.

Musical Instruments.

Various methods of producing sounds, as an accompaniment to the voice, are mentioned in the section dealing with corrobborees, viz:—by the concussion of two boomerangs or of hardwood sticks; by beating the ground with either implement; by striking, with the half-closed hand, a part of the person and, also, by means of a simple tubular instrument.

This last consists of a piece of hollow stem (or branch) of a small tree, probably a mallee eucalypt, which has been tunnelled by termites. By sending the voice through this the reverberations of the naso-pharynx are intensified, and a monotonous droning sound is produced. The only example collected was that used in the Atnimókita corrobboree, which has been described in a previous section. This is 24 inches long, $2\frac{3}{4}$ inches wide at the larger end, and 2 inches at

the other and is so extensively hollowed out that the thickness of the peripheral wood does not exceed half an inch in thickness. It is by no means straight, has been decorticated, and the irregularities of its external surface have been roughly adzed down. For ornamentation it has been red-ochred all over, with three circumferential bands of white at each end.

I am indebted to Mr. Zietz, Sub-Director of the South Australian Museum, for the opportunity of figuring and describing a simple musical concussion instrument from Charlotte Waters—one of the districts inhabited by the Arunta tribe. It consists of two pieces of dark, hard wood, possibly the heart-wood of Mulga and of a size and shape which may be best seen by reference to the figure (Plate VI., Figs. 11 and 11*a*). I have never seen the instrument in use, nor do I know under what circumstances it is used, but from the position of concussion facets the sound is evidently produced by striking the plain piece against the bevelled edges that lie between the forks of the other.

Playing Stick—"*Ŭrkwa*" (Plate V., Figs. 3 and 3*a*).

As stated elsewhere, broken fragments of these articles were sometimes seen in camp, especially at Dalhousie Springs, but no perfect specimen was collected by the expedition. For purposes of illustration I have therefore taken an example from the Murray River, which is identical in form with that seen in Central Australia. It consists of a long slender handle which swells at one end into a fusiform knob and tapers very gradually towards the other. The total length is 4 feet 4 inches, and the relative dimensions may be seen in the drawings. This particular stick appears to be made of some Eucalyptus wood, but Mulga is, I believe, the material used in Central Australia. It will be noticed (Fig. 3) that the handle exhibits a slight curvature which may be wholly or partly due to natural warping. The manner of use will be mentioned under "Games," and it appears that in such characters as form, balance and flexibility these sticks vary considerably in excellence for the purposes intended.

Hold-all (Plate VI., Fig. 4).

While some of the articles in constant use, such as knife, pipe, tobacco of civilisation or quid of the native product, are usually carried about the person either in the girdle, armlet, head-band or behind the ear, the native's few belongings not in such frequent requisition are sometimes carried in a primitive wrapper to which the above name seems appropriate. A specimen collected at Mount Olga by Professor Spencer, consists of an irregularly oval piece of the dry

shrivelled skin of some furred animal, probably *Lagorchestes*, sp. This being rolled longitudinally serves as the wrapper and in this case it contained two prepared flakes of opaline quartzite (Plate VI., Fig. 13) of the same character as those used for the adze and spear-thrower, a piece of red ochre showing by its flattened facets of attrition that it had been in frequent use, a plume of emu feathers, an apron of Peragale tail tips and a length of very thick tendon. On the outside it is secured by a piece of fur-string bound spirally round it.

Sometimes a roll of "paper bark" (*Melaleuca*, sp., *vide* note to section on "Stone Knives") serves the same purpose, and this is particularly the case in regions to the north of the McDonnell Ranges, but of late years a small bag of calico or other stuff obtained from the whites, or even a simple wrapping of such material is similarly used I did not see throughout the whole trip a single example of basket or "dilly-bag" of native manufacture, nor could I learn that such articles are made in the McDonnell Range district.

Clothing and Ornament.

The description of these articles will be facilitated by a short notice of the chief materials used in their manufacture.

Human Hair.—This is loosely twisted into string of two strands, long lengths of which may be wound into a ball or skein so as to be ready for use. As will be seen in greater detail in Mr. Gillen's notes, there are two classes of hair, in use for various articles, which are held in very different estimation. One, which may be called the ordinary kind, is provided by the women, and has no particular value attached to it; the other kind is taken from the head and beard of a dead warrior of some distinction, and the waist girdles made with it are held in special estimation as conferring physical and occult powers upon those wearing them.

Fur.—The fur of various animals is, by means of the native spindle (Plate VI., Fig. 10) spun into long strands and this again is twisted into a two-ply string of greater or less compactness; sometimes this is of almost whipcord-like hardness, but more generally it is loose in texture. That of the opossum (*Trichosurus vulpecula*), the red kangaroo (*Macropus rufus*), and the curo (*M. robustus*), is extensively used for this purpose, and, perhaps also, that of other animals. When examined microscopically some specimens of string showed a mixture of the fur of both kangaroo and opossum. Usually the string, when made up into articles, is so impregnated with grease and red ochre that the nature of the material is with difficulty recognised and even before it is made up it is also frequently coloured. I have not thought

it necessary to determine the nature of the fur in the case of each article, as different kinds seem to be used indiscriminately, but I will merely speak in general terms of fur-string.

Tendon.—The tail tendons of the red kangaroo, euro and wallaby—the size varying with the size of the animal—make excellent material for binding and splicing, and are used extensively for these purposes. I was told also that emu sinews were similarly used. Notwithstanding, however, the frequent use of tendons in these ways, I met with no instance where they were used for sewing and, indeed, Mr. Gillen informs me that no sewn articles are made.

Head-rings.

Males.—Several varieties were noticed, the commonest being constructed as follows:—A ring-shaped skein or single thickness of fur-string is, to use a nautical term, closely served with string of the same material, that is, the latter is wound spirally round the former so as completely to conceal the central circular core. The whole is so heavily impregnated with grease and red ochre that the constituents of the ring and the character of the string are not at once apparent; the ring looks, in fact, as if it were a single solid cord of a thickness varying from a quarter to three-eighths of an inch. Of such rings one to four may be worn encircling the head from just above the forehead to below the occiput.

In another kind several strands of fur-string are arranged side by side so as to form a flat band, these are covered with white earth or with an admixture of this and eagle-hawk's down (*Aquila audax*), which readily adheres to the furry surface. This band lies across the top of the forehead, and the ends are tied below the occiput. Sometimes the head-band is a simple coil of fur-string.

Females.—One or, less frequently, two or three rings similar to those first described for males are worn, but not so generally as in that sex. In one case the form was strap-like, being composed of several strands very much flattened and lying close together. The two ends of the strap were tied beneath the occiput. Occasionally a similar strap-like frontal band was encrusted with white earth, and in other cases it consisted of a skein of many coils of fur-string, either plain or red-ochred.

Neck-bands.

Males.—In the simplest form this consisted of a ring of about a quarter of an inch or less in thickness, constructed after the manner of the head-rings,

and similarly heavily impregnated with grease and ochre. This is pulled out so that it becomes a double cord, and the two bights or looped ends are joined together at the back of the neck with hair-string, of which one long end may dangle down the back and have attached to it a Peragale tail tip, tied on with tendon. Usually two or three such rings are worn, so arranged, by placing one within the other and tying them together at opposite poles, that when they are pulled out they form, collectively, a band of four or six cords according to the number used.

In another instance a long thin cord constructed in the same way has attached at each end a Peragale tail tip; this is looped round the neck and tied behind, the two long ends and tail tips, dangling down the small of the back.

A neck ornament collected at Henbury, has a central core of human hair. This was, in a way similar to that described, bound round several times with rather thick fur-string, so that the whole formed a dense, thick cord, tapering a little to each end, fifteen inches long and three-quarters of an inch thick in the middle. The ends were tied together at the back of the neck by the continuation of the axial core of hair-string, to one long end of which was attached a Peragale tail tip. In this case the application of grease and ochre was excessive. The note made by Professor Spencer, who collected this specimen, is to the effect that this form contains the hair of a dead warrior and is put on when they "want to fight and kill man dead." If placed near a child it is supposed to do it harm. It was parted from reluctlantly and spoken of in a whisper.

Females.—The neck-bands usually observed were similar to the form first described for men. Occasionally, however, rather pretty necklaces are worn of the vermilion-red fresh, or yellow bleached, seeds of Stuart's Bean Tree (*Erythrina vespertilio*). These are much more common north of the McDonnell Ranges, where the tree grows freely. The seeds are bored by burning with some pointed instrument, usually in the transverse axis, but occasionally in the long axis. They are strung on to a long string which is worn round the neck in several coils.

Head Ornaments.

Males (Plate VI., Figs. 5, 5*a*).—Light brown emu feathers are felted into a compact, shallow, trough-shaped mass with open ends. It is possible there may be an interior basis of grass stems, but as it would involve some damage I have not determined the point. On the concave surface of one specimen there are some indications of Triodia resin having been used to assist in the compacting

of the feathers, but this may be accidental. This article is worn riding saddle-fashion on the hair, which is brought together in a bunch, or chignon, at the occiput, and is bound on with a long length of fur-string. Surmounting this feather pad, in one example, is a fan-shaped plume of dark emu feathers composed of three constituent bundles bound together by fur-string; in another, which is that figured, the tail tip of a Peragale attached to a pointed stick is inserted at each upper corner. These head appendages are further fixed by from two to four pointed bone hairpins (Fig. 5*a*) made out of the upper end of a small marsupial fibula, from which the epiphysis has been removed. Two of the hairpins, in one specimen, have a rounded head of Triodia resin.

Another specimen is not so large or so trough-shaped, and the plume is of the feathers of the delicate owl (*Strix delicatulus*).*

As stated elsewhere, it is doubtful how far this form of head-dress is to be regarded as peculiar to the men of the Luritcha tribe.

The following somewhat similar head ornament, however, was collected amongst the Arunta tribe. Emu feathers are loosely felted into an oval flat mass (10in. by 4in.), from the edges and surfaces of which the quill ends of the feathers project freely. This is fastened to the hair with bone hairpins, but no plume accompanied it.

Various feather plumes are worn on the head, which either hang over the forehead, being retained by the head band, or are fixed to a thin pointed stick and stuck into the hair. Worn in one or other of these ways, plumes of the feathers of the following birds were observed:—eagle-hawk (*Aquila audax*), western brown hawk (*Hieracidea occidentalis*), delicate owl (*Strix delicatulus*), or the two last-named in combination, and black cockatoo (*Calyptorhynchus stellatus*), the tail quills in combination with feathers of the delicate owl, besides, probably, others in which the coating of red ochre makes the specific diagnosis uncertain.

Except in the case of the tail quills of the black cockatoo, the individual feathers of the plumes are split longitudinally down the shaft into two separate valves.

A kind of head ornament worn in certain corrobborees and on other special occasions consist of a slender stick of some light yellow-coloured wood, about

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* I have to express my indebtedness to Mr. Zietz, Assistant Director of the South Australian Museum, for his valuable aid in the specific determination of many of the feathers mentioned in this section.

15 inches to 18 inches long and from a quarter to three-eighths of an inch thick (Plate VI., Fig. 9). This is pointed at one end and scraped or shaved on four sides for the greater part of its length and in a direction away from the pointed end, the curled shavings being left attached to the shaft. Two of these are worn erect, one on each side of the head.

Large plumes of the feathers of the eagle-hawk, and probably of other birds, are also worn in the waist-belt at the small of the back or in one or both armlets. As in the head plumes, the feathers are split longitudinally. The plumes frequently worn in the corrobboree caps are large bundles of emu feathers put together bouquet fashion, with the hafts enveloped in tubular sheaths of loose grass-stems, and bound round with fur-string, which may be smeared with white earth or ornamented with Portulaea down. Other varieties, however, are used as will be seen on reference to the plates.

Females.—No similar ornaments were observed amongst the women.

Nose Ornaments.

The form of ornament most frequently worn in the nose was a wing bone (radius) of the eagle-hawk *(Aquila audax)*, from which the two ends had been removed. One end is blocked with a plug of Triodia resin neatly rounded off, and inserted into the other is frequently seen a Peragale tail tip (Plate VI., Fig. 6), or in one case it was the crest of Leadbeater's Cockatoo. Such bones were also often used as a head ornament. Another form seen was the half of a longitudinally split bone of apparently the same nature, the ends being rounded off and the concave surface marked with groups of transverse or oblique cuts or scratches (Plate VI., Fig. 7).

The upper part of the fibula of a kangaroo, from which the epiphysis has been removed and the lower end pointed, is also indiscriminately used either as a nose ornament or thrust into the hair, and not unfrequently a piece of ordinary or charred stick was inserted into the hole in the septum. As a rule, however, in ordinary life the perforation was unoccupied, particularly so in case of the women.

Armlets.

Males.—One or more rings made, as described under head-rings, either of hair- or fur-string, or of a mixture of the two, were frequently worn high above

the elbow on either arm, fitting tightly. These serve to retain small articles such as the quid of native tobacco or the pipe.

By the females similar rings are worn, but less frequently, and once or twice I noticed them worn below the elbow.

Waist-belts.

Males.—Hair string is coiled so as to form a skein or hank, from 24 inches to 32 inches long, and containing 50 or more strands, the two opposite ends of the skein being bound with the same material. In most of the specimens collected the skein is loose and open, and the individual strands a good deal kinked; in others it is slightly twisted so as to form a compact single cord. When worn the two bights are brought round the waist and tied together. It is to be noticed that different lengths of the hair string, constituting the hank, are spliced together with fine (wallaby) tendon.

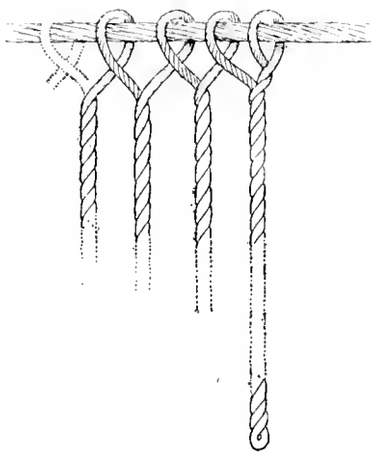
As previously noticed great value is attached to those girdles, which are made from the hair of a deceased warrior, and it was always exceedingly difficult to persuade a native to part with such articles.

A belt worn by a female consists of a large ring of fur made as described under head rings. When worn it is twisted into a figure of 8 and folded so as to make a double ring, which is slipped first over one arm and head, and then brought down over the other shoulder into its place.

Aprons.

It has already been mentioned that nearly all the adult males—and this is true of both the Arunta and Luritcha tribes—wear a small conventional covering that scarcely deserves the name of apron which, however, I have been forced to adopt for want of a better term. Occasionally, but not frequently, a larger and more efficient covering is worn by the females to which the term is fairly appropriate, and as the structure of this is simpler and more evident than that of the usual form met with in the males it will be convenient to describe this first.

Closely set, twisted strands of fur-string hang vertically from a thin hair or fur-string waist-girdle, the individual pendent strands being looped round the



girdle in the manner shown in the accompanying sketch where they have been artificially separated to allow of representation. The length of the pendent strands may be as long as 10 inches, and the breadth of the apron which they form when in close apposition is from 6 to 8 inches, so that it is large enough to conceal the parts which it is intended to cover. I only saw one of these articles in use, but it is shown on one of the female figures, in Plate XI., Fig. 9. North of the McDonnells it is much more commonly worn.

Amongst the males a pattern is frequently seen which resembles, in smaller form, that just described, the vertical strands not usually exceeding 5 inches or the width of the apron 3 or 4 inches; otherwise the structure is the same, and it is worn suspended in the same way from a hair or fur waist-girdle. In the most common form very short twisted, or plaited, strands of fur-string (about 2 inches in length) are, in precisely the same way as that just described, looped round a still shorter horizonal length of the same material. The latter is then bent on the free side—*i.e.*, on the side opposite to that from which the looped strands proceed, and the two ends are brought together and joined. The result is that which has been described as a flat fan-shaped tassel (Plate VI., Fig. 8), the strands now radiating from a centre instead of hanging vertically and parallel to one another as in the previous pattern. This form is attached with wallaby tendon to the pubic hairs, and, as already stated, its small size renders it quite ridiculous as a covering. Occasionally human hair is used for its manufacture. An ornamental and much more efficient covering not unfrequently seen is made of the black and white tail tips of *Peragale lagotis*. The skin is removed from the tip of the tail of sufficient length to include some of the black fur as well as the terminal white tuft, or it may be that only a strip is taken from the dorsal surface. This strip is wound in a close spiral round a central core of hair-string. Three or four tail tips thus prepared are joined together in a bundle by binding the hair cores together with tendon, and several bundles are similarly united to form a large tassel comprising two dozen tail tips or more, of which, however, the constituent tail tips do not hang at the same level. The aggregate of hair cores, loosely twisted together, forms a waist-girdle from which the tassel hangs, or it may hang from one of the larger hair girdles which have been described. In one

specimen the strips of skins were wound round thin pieces of stick and these were then spliced with tendon to strands of hair string which were brought together in the same way so as to form a belt.

As already mentioned oval concave plates, plain or variously marked, made out of the body-whorl of *Melo æthiopica*, are occasionally found in use in a similar position, even as far south as the Peake, having made their way through the heart of the continent from the north and north-west coast; much more rarely a plate of the nacreous layer of the pearl shell oyster (*Meleagrina margaritifera*) forms a similar appendage.

"*Knouts.*"

Some curious articles, if the name I have given be justifiable, were given to me by Mr. Gillen. These consist of skeins about a foot long and heavily red-ochred, composed of from 30 to 80 strands of hard whipcord-like string of varying thickness. At opposite ends the constitutent strands are bound together with a few turns of the same material, which, on examination, proves to be some vegetable fibre. Mr. Gillen informs me that these cords are used for chastising recalcitrant and offending females, and are in use amongst the Arunta, Kaitish, and Warramunga tribes.

Kurdaitcha Shoes.

A pair of these peculiar shoes was given to me at Alice Springs by Mr. Gillen. I saw a pair also being made by a native at the police camp at Illamurta on the Ilpilla Creek, and we have not unfrequently received them at the South Australian Museum from various parts of Central Australia, particularly from the country in the neighbourhood of Lake Eyre. But whether they are still habitually used I cannot say. A very good and reliable account of their manner of employment has recently been written by Mr. P. M. Byrne* of Charlotte Waters, who has had a long and intimate acquaintance with the natives of his district, a section of the Arunta tribe. An abstract of this paper for which I am indebted to an article in the *Australasian* of 23rd November, 1895, may be conveniently introduced here as being probably the most authentic and reliable account that has appeared of a very singular custom.

"This custom is known as that of 'Kurdaitcha luma,' the first word signifying an evil being, the latter to walk about.

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* See also Royal Society Vict. Proceedings, vol. viii. (new series), p. 65.

"When a native for some reason desired to kill a member of another camp or another tribe he consulted the medicine man of his camp, and arrangements were made for a Kurdaitcha luma.

"The attacking man was called the Kurdaitcha, and he and the medicine man went together similarly attired. The face was smeared with charcoal, and a broad band of white gypsum was drawn down the face over the nose, and another similar band passed across the chest from shoulder to shoulder. A bunch of feathers was worn on the front of the head, and a bunch of green leaves stuck into the hair behind. Around the waist was a girdle made of the hair cut from the head of some dead warrior, the possession of which not only added valour and accuracy of aim to its possessor but caused dismay in the heart of his enemy. The legs were bound round with ordinary hair girdles, and both medicine man and Kurdaitcha wore remarkable shoes. These had the form of a long pad, convex below and flat above, made of human hair with numberless emu feathers intertwined, and with a certain amount of human blood to act as a cementing substance. Over the upper surface was stretched a network of string made of human hair, with a hole in the centre through which the foot was put, and across which stretched a hair-string serving as an instep strap. Both ends of the shoes were rounded off, and were exactly similar to one another, which has given rise to the erroneous idea that their object was to prevent the wearer being tracked.

"Once out of the sight of their own camp the medicine man and the Kurdaitcha put on the shoes, for which there appear to be special names in different parts, but which the blacks until they have been in contact with the whites do not themselves speak of as Kurdaitcha shoes. Around Charlotte Waters they call them 'Intŭrthŭrta.'

"Then, leading the way, the Kurdaitcha creeps stealthily along; when the hostile camp is reached, if it be daytime, he and the medicine man remain hidden if they can until dark, when the Kurdaitcha will creep on and make the attempt to spear his enemy dead. If successful, the medicine man comes up and inserts into the wound the head of a live lizard which he has been carrying in his girdle, and which is supposed to drink up the blood and so hide the traces of the spear wound. Then the two go back to their own camp. When the murder is discovered, then the medicine man of the attacked tribe at once appoints an avenger, who is always a special relation of the dead native, and a return Kurdaitcha luma is arranged. If the Kurdaitcha tracks be seen near a camp no attempt is made to follow them up, but a keen watch is kept. If any native actually catches sight of a Kurdaitcha, he announces the fact by saying that 'a

wild dog is coming.' Everyone understands what he means, and an attempt is made to kill the Kurdaitcha. This form of vendetta is a very risky game for the Kurdaitcha to play, but, as usual, the medicine men make matters right for themselves, as it is always an understood thing that they shall be allowed to return scot-free. It is quite possible that further north the custom is still carried on, but Mr. Byrne says that it is now quite twenty years since it has died out in the district round Charlotte Waters.

Gesture or Sign Language.

Observations by various writers and travellers had made me aware of the existence, amongst some Australian tribes, of signs, consisting for the most part of movements of the hand and fingers, by which objects and simple ideas can be signified. It was, however, a great surprise to us to find that these signs constituted, in the districts visited, a very extensive system of gesture language, which is not only much used but is capable of indicating a very large number of objects, as well as simple ideas concerning them. The late Mr. Curr states that the practice of "communicating by signs is exceptional, the Australian being noticeable for the little use either of signs or gesticulations." Our information on the subject is still very limited, but I have little doubt, if inquiries were specially directed to the question, that it would be found that the use of gesture language is very much more general in Australia than is indicated by Mr. Curr's remark.* I have reason to believe that in Central Australia the use of such signs is widely spread; the Arunta and Luritcha tribes at least, who use them freely, cover a good part of that region, and the area would be still further extended by the inclusion of the Dieyerie group of tribes, who, as Mr. Gason informs us, make a copious use of signs.† I think it is more than probable, also, that the "masonic signs" noticed by Stuart when, on his fourth journey, he was checked at Attack Creek, were gestures of the character in question. Of intervening tribes I cannot speak from personal observation, but Mr. Gillen informs me that the sign language reaches a still higher development in the tribes to the north of the McDonnell Ranges than amongst those to the south. We frequently saw them used by natives as they walked alongside of our party, or as they sat together in camp, when it seemed as if a more or less continuous and, to themselves, certainly intelligible silent conversation was being carried on.

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* *Op. cit.*

† The Dieyerie Tribe, Samuel Gason, A.D. 1874. Reprinted in Native Tribes of South Australia, ed. by J. D. Woods, A.D. 1879.

Some natives appeared greater adepts than others, and I think, generally speaking, the lubras excelled the men in readiness of execution. From what Professor Spencer tells me, a greater facility in their use was shown by the small party of natives met with at Ayers Rock, who had no acquaintance with white men, than by those further to the east, who had come more in contact with civilisation. During the too hurried journey of the Expedition Professor Spencer and I endeavoured to make ourselves acquainted with as many of the signs as possible, but, as stated elsewhere, we found a good deal of difficulty in getting our fingers to fall readily into the necessary positions, whereas the movements were executed with great nimbleness and ease by the blacks. By reference to the descriptive list of signs, which I am able to record, it will be seen that a good deal of variation exists in different parts. Those for which I am indebted to Professor Spencer, which, moreover, have the great advantage of being illustrated by his facile pencil, are partly from a "sandhill" native met with at Ayers Rock, who must certainly have belonged to the Luritcha tribe; a few were either from a man at Tempe Downs, who was almost certainly a member of the same tribe, or from an Arunta native of the Lower Finke. Those to which my name is attached, and I regret not to have been able to illustrate them more fully, are also from a Luritcha picked up at Tempe Downs who accompanied us to the George Gill Range, of which locality I believe he was a native. Mr. Gillen's list is from an Arunta native belonging to Alice Springs.

It will be noticed that there is a greater correspondence between the signs of my Luritcha and Mr. Gillen's Arunta native than between the former and Professor Spencer's instructor of the same tribe. This may, perhaps, be accounted for by the fact that Tempe Downs is a place where the two tribes meet, in consequence of which some blending of the signs has taken place. However, notwithstanding the undoubted variations that exist, members of these two tribes, which adjoin one another, appeared to be able to make their respective signs mutually understood. It would be very interesting to know how far the gesture language affords a means of communication with more distant tribes.

In the letterpress, descriptive of various signs, which follows, the Roman numerals, when used, indicate the digits in order, I. indicating the thumb. The position of the hand designated prone is that in which the palm is turned downwards while the reverse is spoken of as supine. Semi-prone will be used to indicate the position midway between the two, *i.e.*, with the radial (thumb) border of the hand uppermost.

Wallaby. *Macropus (? sp.).*

Fig A

Fig B

(*a*) II. and III. extended; I., IV., and V. closed in under II. and III. (Fig. A).

Spencer, Tempe Downs.

Native name, "Tau-alpa."

(*b*) I. extended, II. crooked, III., IV. and V. closed in. Movement of hand as if sign-maker had hold of tail between thumb and forefinger and were pulling the animal back (Fig. B).

Spencer, Finke River.

(*c*) II. extended, III. also extended, but slightly bent at meta carpo-phalangeal joint; IV. and V. bent into palm. Hand, semi-prone, jerked up and down from wrist.

Stirling, George Gill Range.

Ground Wallaby. *Onychogale lunata ?*

II. bent into a semicircle, III., IV. and V. closed in upon the palm; I. bent so that it lies on the second joint of III. Hand semi-prone and moved with a jerking motion, so that II. moves through the arc of a circle.

Gillen, Alice Springs.

Native name, "Iwutaa,"

Rock Wallaby. *Petrogale lateralis.*

Hand held with palm facing upwards and inwards; II. fully extended, with which III. forms nearly a right angle; IV. and V. closed in upon the palm and

the thumb is turned inwards so that its tip rests upon the second joint of IV. Hand in this position is slightly moved in a semicircle, so that at the end of movement the back of the hand is horizontal and facing downwards.

Gillen, Alice Springs.

Native name, "Arrawa."

Large Kangaroo—*e.g.*, *Macropus rufus.*

(*a*) Hand first of all closed, back uppermost, then II. and III. are flicked forwards from the thumb to the position shown in Fig. A.

Spencer, Tempe Downs.

(*b*) With back of hand uppermost, the four fingers are flicked outwards together from the thumb.

Stirling, George Gill Range.

(*c*) Back of hand uppermost, the four fingers flexed and the index resting against the thumb; the hand is then alternately moved forward in a way imitative of the movements of a kangaroo.

Gillen, Alice Springs.

Native name, "Ochirra."

Euro. *Macropus robustus.*

(*a*) Hand first closed as for *Macropus rufus*, then all the four fingers are thrown out from the thumb.

Spencer, Tempe Downs.

Native name, "Kŭnŭla."

(*b*) Hand prone, II. and III. extended and held slightly apart; other fingers were flexed, thumb extended. The fingers are in much the same position as for wallaby sign, only the hand is completely prone.

Stirling, George Gill Range.

(*c*) Hand prone, I., II. and III. extended and curved slightly inwards and downwards, so that the thumb and index form the letter C. IV. and V. are closed in upon the palm and the hand moved in imitation of the movements of the euro.

Gillen, Alice Springs.

Native name, "Arrunga."

Kangaroo Rat. *Bettongia lesueuri.*

III. overlaps II., IV. and V. bent in underneath, I. in contact with the terminal joint of IV., move hand in imitation of animal hopping (Fig. C).

Spencer, Tempe Downs.

Native name, "Mal-la."

Opossum. *Trichosurus vulpecula.*

Move hand in position shown in Fig. D as if animal were moving forward.

Spencer, Tempe Downs.

Native name, "Wiota."

Hand held so that index and thumb make horizontal C-shape, other fingers flexed. Move hand up and down.

Stirling, George Gill Range.

Hand held with thumb upwards, and bent back as far as possible, index crooked and the rest closed in upon the palm, the whole effect being to imitate the foot of the opossum. If the opossum is "up a tree" and visible, a slight jerking movement is added.

Gillen, Alice Springs.

Native name, "Anthinna."

Pig-faced Rat.

Hand held with back uppermost, I. extended, II. crooked so that its tip lies on the first joint of I.; remaining three fingers closed in upon the palm. Hand in this position slightly jerked backwards and forwards from the wrist.

Gillen, Alice Springs.

Native name, "Il-lula."

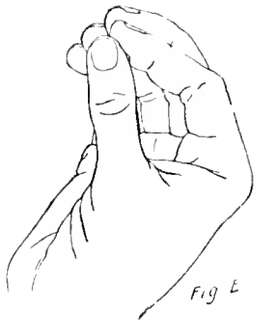


Fig E


Fig F

Jerboa Rat. *Hapalotis, sp.*

Hand supine, with fingers bunched together. Little jerking movements forwards of whole hand held in this position (Fig. E).

Spencer, Ayers Rock.

Native name, "Lokura."

Small Mouse. *Mus, sp.*

Finger tips not so bunched together as in Fig. E; II. slightly projecting beyond the rest (Fig. F).

Spencer, Ayers Rock.

Native name, "Piechiera."

Dingo. *Canis dingo.*

(*a*) I. and II. in contact; move hand in imitation of a dog moving forward with a bounding motion (Fig. G).

Spencer, Ayers Rock.

Native name, "Ba-ba."


Fig G

(*b*) II. loosely extended, III., IV. and V. bent inwards; I. rests on III. The whole hand is then slightly rotated on the wrist and at the same time moved forwards.

Spencer, Finke River.

(*c*) Hand semi-prone; II. semi-extended, other digits loosely flexed into palm. Hand moved from side to side with jerking movements, the semi-extended index sharing in the movement.

Stirling, George Gill Range.

(*d*) Hand prone; II. loosely extended or slightly bent. Tips of III. and I. brought into contact; IV. and V. bent in upon the palm. Hand in this position moved in imitation of the waggle of the dog's tail.

Gillen, Alice Springs.

Native name, "Ud-nirra."

Rabbit Bandicoot. *Peragale lagotis.*

Two first fingers extended and the whole hand shaken from side to side.

Spencer, Tempe Downs.

Horse.

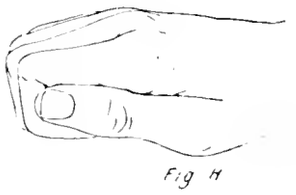


Fig. H

Hand in position shown moved up and down with slight movements of flexion and extension from wrist (Fig. H).

Stirling, George Gill Range.

Bullock.

Hand semi-prone, II. and V. extended so as to suggest horns, other digits flexed. Thumb drawn across palm, movements of flexion and extension from wrist of hand in this position.

Stirling, George Gill Range.

Camel.

(*a*) Hand extended and the whole arm moved from shoulder as if it were the leg of the animal. The signmaker moves his own head and neck slightly, but so as to exactly imply the movement of those of a camel. A small jerk is given to the hand which imitates exactly the way in which its foot is set down on the ground (Fig. I).

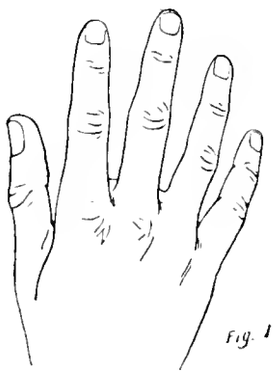


Fig. I

Spencer, Ayers Rock.

(*b*) Hand prone, fingers slightly flexed. Hand in this position, together with whole arm, moved as if in imitation of the slow, measured, undulating movements of the head of a camel.

Stirling, George Gill Range.

Emu. *Dromaius novæ-hollandiæ.*

(*a*) II. extended, III. bent in, IV. and V. extended, V. with its last joint resting on IV. Thumb with its under surface in contact with the inner side of III. Slight up and down movements of the hand in this position suggesting the walk of the emu (Fig. J).

Spencer, Tempe Downs.

Native name, "Kurlaia."

[Note by Professor Spencer.—Though for a white man this is a rather difficult position to assume, it was easy enough for the blackfellow.]

(*b*) Hand, as in Fig. K, moved up and down so as to imitate the movements of the head of the emu in walking.

Spencer, Finke River.

[Note by Professor Spencer.—This is the commonest emu sign.]

A native at George Gill Range used the same sign as the Finke River black (Stirling), and so did one at Alice Springs (Gillen).

Native name at the latter place, "Erlía."

Native Bustard or Wild Turkey. *Eupodotis australis.*

Index and thumb so placed as to form a vertical C-shape, other fingers flexed. Hand in this position advanced with a series of small jerks downwards and forwards suggesting movements of head in picking up food.

Stirling, George Gill Range.

At Alice Springs the sign recorded by Mr. Gillen was practically the same as above.

Native name, "Ertúa."

Eagle-hawk. *Aquila audax.*

(*a*) Fingers and thumb crooked like the talons of a bird. The hand in this position is moved as if pouncing down upon its prey, the fingers and thumb being closed when the hand is at the bottom of the strike. Afterwards the hand is lifted up as if holding the prey, and the thumb moved inwards as if killing it (Fig. L).

Spencer, Ayers Rock.

Native name, "Kartu-wara."

(*b*) Fingers loosely extended and slightly separated and whole hand moved slowly up and down from wrist as if imitating the motion of wings.

Stirling, Gill's Range.

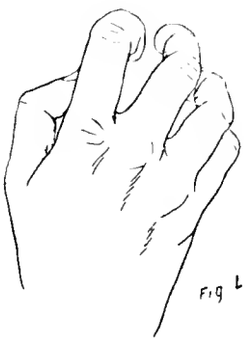
(This seemed to apply to all large flying birds generally.—E. C. S.)

(*c*) Hand prone; fingers extended and loosely held together. Thumb extended from the hand and the whole hand is moved upwards and downwards from the wrist so as to imitate the movement of the wings.

Gillen, Alice Springs.

Native name, "Ir-ritcha."

[Note by Mr. Gillen.—This sign applies to birds generally].



Crow. *Corvus coronoides.*

(*a*) I., II. and III. extended, IV. and V. closed. Hand in this position is moved leisurely up and down so as to imitate the steady, slow flapping of the wings (Fig. M).

Spencer, Ayers Rock.

(*b*) Hand prone, II. and III. extended, IV. and V. bent but not closed upon the palm. The tip of the thumb is placed on the first joint of IV.; II. and III. are moved up and down and alternately closed and separated.

Gillen, Alice Springs.

Native name, "Ungippa."

Small birds generally.

Rapid up and down movements of hand from wrist, the fingers being loosely extended and slightly separated suggesting rapid fluttering of wings.

Stirling, George Gill Range.

Jew Lizard. *Amphibolurus barbatus.*

Hand prone, II. extended, the thumb also extended and lying close to II.; remaining fingers crooked but not completely closed into the hand. Hand in this position slightly jerked up and down from the wrist joint.

Gillen, Alice Springs.

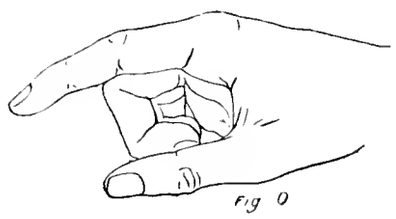
Native name, "Ŭnkirla."

Native Porcupine. *Echidna aculeata.*

Hand prone. I. and II. are extended and nearly parallel; III., IV. and V. are crooked and nearly closed in upon the palm. Hand in this position moved sideways from left to right in imitation of the waddle of the porcupine.

Gillen, Alice Springs.

Native name, "Inarlinga."



Lizard. (Smaller species, especially of Amphibolurus).

(*a*) II. extended, thumb and other fingers loosely bunched together. Shake the extended forefinger from side to side to imitate waggling of tail (Fig. N).

Spencer, Tempe Downs and Finke River.

Native name, "Murtinka."

(*b*) Hand semi-prone; index extended, other fingers slightly flexed; thumb partially erect. Oscillatory and undulatory movements of hand in this position (Fig. O).

Stirling, George Gill Range.

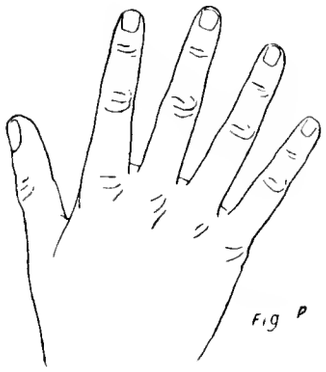


Fig P

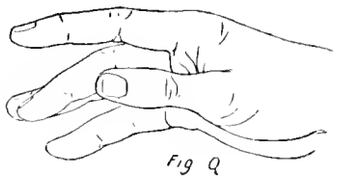


Fig Q

Perenti. *Varanus giganteus.*

(*a*) Thumb and fingers all extended. Hand lifted up and down to imitate movements of feet (Fig. P).

Spencer, Tempe Downs.

(*b*) Hand semi-prone, fingers extended, the index rather above the rest Hand in this position moved forward with oscillatory, undulatory movements, in which the prone and mid-prone positions quickly succeed one another (Fig. Q).

Stirling, George Gill Range.

(*c*) At Alice Springs the movements of the hand were the same, but the fingers were held close together.—(Gillen).

Native name, "I-chunpa."

Iguana. Larger forms, especially *Varanus gouldii* and *V. punctatus.*

(*a*) This is a combination of the signs for the Perenti and small lizards. The fingers are first extended as in sign for the former, then I., III., IV. and V. are bent inwards, but not quite so much as in Fig. N, and II., which remains extended, is moved so as to imitate the waggling tail (Fig. R).


Fig R

Spencer, Tempe Downs.

[Note by Professor Spencer :—I think the series of gestures for small lizards, Perenti and iguanas, as represented by Figs. N, P and R, is rather interesting. In that for small lizards the striking feature is the length and motion of the tail—hence the extension and movement of the first finger. In the Perenti it is the size which is the one striking feature, and this is evidently expressed by the extension of the fingers as far as possible. In the other iguanas it is both

the size, as compared with that of Amphibolurus, and the length of the tail which attract attention—hence the combination of the two signs.]

(*b*) Hand semi-prone, I. extended in the long axis of the hand, II. is bent at the second joint; the remaining fingers are extended and close together. Hand in this position is lightly shaken upwards and downwards from the wrist.

Gillen, Alice Springs.

Native name, "Erli-natchera."

Snake. No special form.

(*a*) Index extended, I., III., IV. and V. bunched together. Whole hand moved to imitate gliding and rolling movement of snake. Position of fingers much the same as in sign for small lizard, but no waggling of index (Fig. S).

Spencer, Ayers Rock.

Native name, "Waami."

(*b*) Hand prone, index extended, other digits partly flexed. Whole hand moved forward so that the point of index describes a spiral.

Stirling, George Gill Range.

(*c*) Hand prone, fingers and thumb bunched together so that the tips are in contact. Hand then moved in a small circle as if to imitate the wriggling of a snake.

Another sign is to hold the hand with the thumb uppermost and loosely extended; the four fingers are close together and crooked, but not closed in upon the palm. The hand is then gently moved in a semicircle.

Gillen, Alice Springs.

Native name, "Ŏbma."

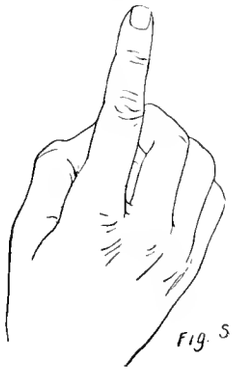


Fig. S

Fig. T

Frog. Probably *Heleioporus pictus* and *Chiroleptes platycephalus*.

Hand in position shown moved as frog were hopping (Fig. T).

Spencer, Ayers Rock.

Native name, "Ngangi."

Sugar Ant. *Camponotus inflatus.*

(*a*) Index extended, thumb and other fingers loosely bunched together. Index then moved as if it were following down the ant's hole.

Spencer, Finke River.

Native name, "Yarumpa."

(*b*) Hand supine, I. and II. loosely extended, the three remaining fingers bent in on the palm; index moved as if beckoning.

Gillen, Alice Springs.

Native name, "Wienathurra."

Sleep.

To denote sleep the hand is held supine, and the index and thumb are so placed that the tip of the thumb rests on the last joint of the finger; the remaining three fingers are turned down into the palm. The hand in this position is then raised so that the tip of the index points towards the eye, and downward jerk of the hand in front of each eye indicates the closing of the lids. The hand is then brought down and, whilst passing towards the left side, it is moved so that the back is uppermost and the finger and thumb point towards the ground to indicate the action of lying down.

Gillen, Alice Springs.

Native name, "Ŭnkwa."

Native Tobacco. *Nicotiana suaveolens.*

Hand supinated, fingers and thumb bunched together so that their tips are in contact. The tips are then alternately separated and brought together.

Gillen, Alice Springs.

Native name, "In-kwulpa."

Pitchuri. *Duboisia Hopwoodii.*

Movement of passing something to or taking something from mouth with fingers bunched together repeated two or three times. Hand then extended as if to receive something.

Stirling, George Gill Range.

I see Fire.

Action of blowing on fingers bunched together and held to mouth, at the same time indicating a locality.

Stirling, George Gill Range.

Fire-Stick.

The fingers are bunched together so that the tip of the thumb rests on the tips of the fingers, which are then moved to and from the mouth.

Gillen, Alice Springs.

Native name, "Ura."

I see Lubra (black woman).

(*a*) Hand vertical and fingers as in figure. Move slightly up and down, at the same time slightly rotating the hand (Fig. U).

Spencer, Ayers Rock.

(*b*) Thumb forwards and upwards; index flexed, other fingers very slightly flexed or nearly straight. Hand in this position, and semi-prone, moved alternately and slightly towards the positions of pronation and supination.

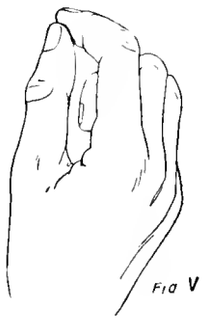
Stirling, George Gill Range.

I see White Woman.

Touch nose with tip of forefinger.

Stirling, George Gill Range.

I see Picaninny.



(*a*) Hand in position shown moved up and down, at the same time slightly rotating the hand (Fig. V).

Spencer, Ayers Rock.

(*b*) Index and thumb brought together at the tips. Hand in this position, and semi-prone, jerked alternately towards the positions of pronation and supination. The movements of the hand are the same as in "I see lubra."

Stirling, George Gill Range.

I see Black Man.

Hand, with index extended, circumducted around ear.

Stirling, George Gill Range.

I see White Man.

Arm from elbow held horizontally; hand supine. All fingers nearly extended or only very slightly flexed. Hand in this position loosely flexed and extended from wrist.

Stirling, George Gill Range.

Indication that a Lubra is to come to Sign-maker.

Fist as ordinarily closed brought round with a sweep towards the body.

Water.

Fist loosely closed, thumb uppermost and only slightly bent. Hand in this position jerked two or three times towards ulnar side.

Stirling, George Gill Range.

Sign of Menstruation.

The same as that for water.

Sign for Urination.

The same.

Sign for Evacuation.

Little finger extended, others closed. Hand in this position jerked forcibly downwards and outwards.

Native Rock Drawings.

(Plates II.–IV.)

In several localities on our journey we found evidence that the natives are fond of utilising, as camping places, the shallow caves or recesses formed by the weathering of the rocks. Besides the signs of old fires, it was usual to find in them, bones of the emu or of marsupials, some of which had been evidently broken for the sake of the marrow, cracked quondong seeds, fragments of the large flat stones used for grinding mŭnyeru, together with other signs of former and repeated occupancy.

On the walls of these rock shelters, or on the adjacent rock faces, were occasionally, but not frequently, found native drawings done in red or yellow ochre, charcoal, or some white pigment, or in a combination of these colours.

The explanations to the plates will sufficiently indicate the localities where these drawings were observed.

They were as a rule simple in design, and their natural rudeness of execution has somewhat disappeared under the hand of the artist. It is perhaps necessary to add that, though the figures are almost all drawn to scale, in their arrangement on the plates, regard has been had for economy of space rather than for their relative positions on the rocks. As will be seen, certain designs are obvious, if rude, representations of animals or of their tracks, in others the significance is not clear. With respect to the more geometrically designed figures, we were told that they represented patterns used for the decoration of the body in corrobborees, which is probably correct, as we saw such patterns. The same fondness for series of concentric circles is here observable as on the ceremonial sticks and stones, and so again the partly crescentiform and partly tri-radiate patterns, of which Figs. 8, 9 and 11 in Plate IV. are examples, are frequently found repeated.

While the significance of some of the drawings were readily recognised by the natives, of others they professed ignorance; and I think the only case in which we were really aided by their information was in Plate IV., Fig. 1, which is very obviously what it is stated to be, though the point of view is peculiar. Probably some of them are merely idle scribblings without real meaning.

It will be noted that the only attempts at the portrayal of the human figure are the rude heads shown in Plate III., Fig. 11, while of animals, lizards and snakes are most frequently represented.

I did not actually see any of the drawings executed, but I was informed they were done either with the finger or with an improvised brush made out of a stick. The nature of the pigments used have been indicated elsewhere, and in some places signs existed of the pulverisation of these either in shallow, mortar-like depressions in the solid basement rock or on flat stones similar to those used for grinding seeds. When used the pigments are mixed with fat.

Besides the drawings of which representations are given, there were found in all, or nearly all, of these shelters numbers of those curious stencil impressions of the human hand that have been so frequently noted from various parts of Australia. They are made, as has often been described, by resting the palm of the hand flat against the rock with the fingers somewhat extended, and by blowing on them from the mouth finely-powdered ochre or charcoal, so that the outline of the hand appears as an uncoloured area on a ground coloured by the pigment.

For the drawings from Ayers Rock I am indebted to Professor Spencer.

Diseases.

During a recent investigation of the records of the Adelaide Hospital, by the writer, from the point of view of the prevalence of hydatid disease in the Australasian colonies, the remarkable fact appeared that no aboriginal admitted as an in-patient during the last eleven years has died in the institution from any other cause than tuberculosis,* hydatid disease, or accident. The extreme susceptibility of the Australian race to tuberculosis, when brought into contact with civilisation, has frequently been observed, but it is difficult to say whether a similar tendency exists in their natural condition. When it is remembered that, throughout Central Australia, their general practice is to sleep absolutely without covering and frequently without shelter of any kind, while subjected to a night temperature which, in winter, usually falls below freezing point and not unfrequently considerably lower, deaths from inflammatory diseases of the chest might be expected to form a heavy percentage of the total mortality. On the other hand, there was no obvious evidence that such was the case, and there is a good deal to be said in favour of the view that the great tendency to lung complaints, observed in the natives who have come under the influence of civilisation, arises from the fact that they alternate periods of being well clad, sheltered and fed with those in which they revert to the conditions of complete or semi-nudity, exposure and hard living peculiar to their natural or wild life.

Those who are impressed, either by actual experience or by the accounts of travellers, with the torrid heat of the Australian summer, will scarcely realise the extreme winter cold of the interior, particularly of the high lands of the central regions. To us who, warmly clad as we were, felt the cold of the nights severely, it was surprising how, stark naked, with no shelter and lying on the bare ground, at a temperature which not unfrequently fell below †20° F., the natives could endure the exposure without harm. Fires they certainly had, but they were comparatively small, and that they felt the cold acutely was evident from their restless movements, sleepless nights, and their endeavours to impart mutual warmth by contact of their bodies. Fortunately there was a very general absence of wind during the nights, or the cold would have been still more severely felt.

Venereal diseases are extremely rife amongst the natives, undoubtedly largely owing to infection by the whites. In a few instances I observed the character-

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* My colleague, Professor Watson, informs me that in the natives who have died in the hospital the invariable seat of commencing tuberculosis is the lymphatic glands, which condition runs on to general disseminated tubercle. In no case, out of a considerable number of autopsies, has he seen cavitation of the lungs.

† On more than one occasion the minimum nocturnal temperature fell to 16° F.

istically disagreeable facial aspects due to the destruction of the nasal septum and falling in of the bridge of the nose, resulting from syphilis. In other cases there were the usual ulcerative affections of the soft palate or loss of voice from laryngeal invasion. In Plate XII., Fig. 13—a naturally unprepossessing countenance—the effects of this disease are probably apparent. It is still a moot point whether these diseases existed before the advent of Europeans. I can see no reason why the causes, whatever their precise nature, which first gave origin to them elsewhere may not have also operated here endemically. The influence of Europeans has undoubtedly been disastrous enough, both physically and morally, to these as to other savage peoples; but before we lay this particular charge at their door we must remember that Australia was not entirely isolated from the rest of the world before their advent. For many years—for how long before the arrival of the first European explorer it is impossible to say—the northern coasts have been regularly visited by the Malays in search of trepang; and even supposing the diseases in question not to have been of endemic origin, they might easily have been introduced by these traders. And, indeed, in respect of small-pox, of the existence of which in Australia prior to the arrival of Europeans there is some, if not indisputable, evidence that it was introduced in this way from the Eastern Archipelago. One may accept this hypothesis while fully admitting the weight of the evidence which traces a great subsequent epidemic to infection introduced into Sydney in 1789, which spread far and wide over the continent amongst the natives.

On the Horn Expedition I saw no marks which could be said to be those of small-pox, but I have frequently seen, in more southern localities in South Australia, where small pox has never gained admittance from beyond sea, such pittings of the face as could only have been caused by variola. In a paper* on the aborigines of North Australia, Mr. Foelsche relates some interesting facts with regard to its prevalence in the Northern Territory, from which it appears that one epidemic at least, in comparatively recent times, seems clearly to be traceable to a visit of the Malay prahus.

Various skin diseases were common, notably pityriasis, psoriasis and eczema, besides others in which the exterior coating of dirt, grease and ochre did not permit of an accurate diagnosis. On one occasion I saw a man in whom the upper and lower lips had entirely disappeared, leaving the gums and brilliantly white teeth completely exposed. The alleged cause was injury by a fire-stick in infancy, but the condition bore the aspect of the ravages of *cancrum oris*.

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* Notes on the Aborigines of North Australia, Paul Foelsche. Trans. Royal Soc. of S.A., vol. v. 1881.

I only saw one case of *carcinoma*—an epithelioma of the foot in a native at Oodnadatta, who was about to submit to amputation.

Ophthalmia was very prevalent amongst both sexes, young and old. Many had partially or completely lost the sight of one eye, and some that of both. The ravages of infantile inflammations are of course much aggravated by want of attention and cleanliness and by the pungent action of the atmosphere of smoke to which they are often exposed in camp, and no doubt also by the superstition that passing a glowing fire-stick close to the eyes will mend matters by driving away the inflammation. The result is occasionally irretrievable damage by the heat.

The suggestion that a woman might have two children at a birth met with derisive laughter. I did, however, see at Alice Springs a young woman who had given birth to half-caste twins. These, I was told, she promptly disposed of, after what is, I believe, the usual method of infanticide, viz., by choking them with sand.

This woman's maternal career is worth mentioning. Her first child was a pure-blooded aboriginal, her next a half-caste by a Chinese father; then came the half-caste European twins referred to, and lastly another pure-blooded Australian. She killed all of them except the half-caste Chinese.*

I am sorry I was not able to acquire any trustworthy information concerning birth practices, though in Mr. Gillen's paper will be found some references to this subject. Lactation is sometimes very much prolonged. At the Mission Station I saw a child known to be over four years of age that was still being suckled, and I remember at Port Essington an amusing instance of the same kind where a child of about the same age was alternately receiving sustenance from the breast and smoking a native made cigarette.

A very prevalent idea, not only amongst these tribes but of frequent occurrence in Australia, is that disease is the result of the malignant influence of an enemy. This sometimes produces a strange fatalistic resignation. On a previous journey I saw at Tennant's Creek a fine and robust man who had received a spear wound through the fleshy part of the thigh in a tribal or intertribal fight a few days before. Nothing could have looked healthier and more promising than

* In another instance the little accident of the birth of a suspiciously light-coloured offspring of a full-blooded lubra was thus explained by the mother in full belief that the statement of cause and effect was perfectly rational, and indeed the legitimate husband, also a full-blooded black, was perfectly satisfied of his own paternity.—"'Sposen lubra eat 'um flour picaninny long a pompey eat 'um too, then him jump up close up whitefellow; flour all day, like it, that make 'um." Suppose the woman eats flour the child in the belly eats it too, and then the child is born closely resembling a white.

the condition of the wound, and I rashly promised a speedy recovery. I heard subsequently, however, that the man, on being told that the spear which had caused the injury had been "sung," that is, had undergone an incantation which bewitched it, proceeded to pine away, and he eventually died without the supervention of any surgical complications which could be detected.

Another idea of the same character also exists, which, however, does not appear to be so marked a feature in Central Australia as in some other parts of the country; this is that certain illnesses are due to the fact that an enemy has "given them a bone," and as may be well believed, the supposed removal of this bone forms a fine field for the antics of the tribal doctor.

Native Therapeutics.

Amongst the tribes we visited I could gather very little information as to the employment of therapeutic agents, except inunction with a mixture of grease and red ochre which seems to be used as the sovereign remedy for a variety of complaints. I was informed, however, that the pounded kernels of the quondong (*Santalum acuminatum*) mixed with grease are similarly used. To wounds, ashes, clay or grease appear to be the common applications. As stated elsewhere, when a sick person is *in extremis* human blood is administered internally and is supposed to be particularly efficacious. Mr. Gillen's paper also contains reference to the external application of this fluid.

In the zoological report mention has been made of the large bag-like structures, constructed by a social caterpillar, which are found suspended to the small branches of the, so called, box-tree (*Eucalyptus microtheca*), and which contain large accumulations of their excrement. The statements, made to us everywhere, were to the effect, that this excrement possessed peculiarly irritating properties, and, though I have no personal experience of such effects, there was invariably both among the whites and blacks a disinclination to handle it on that account. I mention this fact because, when at Bimbowrie in the north-eastern district of South Australia, I observed a hairy caterpillar, of a different kind, that makes a similar though smaller bag of a reddish-brown colour on the branches of various herbaceous shrubs, and I was informed by Mr. Crozier, the owner of the station, that the excrement, which they similarly contain though it is non-irritant, from the bags on one particular kind of bush and from that only, is used both by whites and blacks to make an infusion or poultice for a local application to inflamed testicles, while the felt-like substance of the bags themselves is applied to syphilitic

sores. This practice I was informed prevails eastward of Bimbowrie as far as the New South Wales border and northwards to the country about Cooper's Creek.

In the case of snake bite it is rather remarkable to find that a ligature is bound round the limb above the seat of puncture which is then held near the fire. I was told also that the wound is sometimes sucked. Had I not received frequent confirmation of this statement I should scarcely have believed that the rational principle of hindering the poison from entering the circulation should have been so clearly recognised and put in practice. Mr. Foelsche records a similar use of the ligature for the same purpose by the natives around Port Darwin.

I had the opportunity of confirming a very curious statement communicated to me by Mr. Thornton of Tempe Downs sometime previous to our visit. It is considered by the natives of this and other neighbouring districts that recently voided urine (human) is an antidote for strychnine poisoning, and as such is habitually administered not only to their dogs which have taken poisoned baits but also to members of the tribe who have become accidentally poisoned by appropriating the baits. I saw several dogs and one woman that had recovered after having swallowed doses that ought to have been fatal. Mr. Thornton and others with him have actually witnessed the administration of this physiological antidote which certainly has the advantage of ready accessibility. Doubtless, the beneficial results which seem real are due solely to the emetic effects, and, indeed, I was told that in other districts ashes and water, or salt and water are given with the intention of bringing these about.

Making of Medicine Men or Wizards.

This seems a convenient place to relate what information I gathered concerning the tribal doctor, or wizard as he might be more appropriately termed. Mr. Gillen gives a graphic account of the manner of induction to office as it obtains at Alice Springs, which it will be seen differs from that here related. Mr. Gillen's opportunities have been so favourable and his accuracy so unquestionable, that his account must be certainly accepted as holding good for the section of the Arunta with which he is so well acquainted. Nevertheless, as the particulars I gathered were only recorded after much cross-questioning and some confirmation, I offer them as possibly being correct for other districts; though, I am well aware of my inferior opportunities for getting at the truth, and of some unsatisfactory features of the accounts I offer.

As far as concerns a portion of the Arunta tribe to the southwards, the following represents what I gathered. Any member of a camp, male or female,

may happen to awaken a man from sound slumber. No amount of questioning, however, could enable me to ascertain what rule, if any, guided the selection of the awakener or the slumberer. The latter arises dazed and stupefied, as if drunk, and complains of feeling ill. The existing practitioner examines him, or if there is none present, one is brought from a neighbouring camp, who fails to find any ailment, and tells the supposed sufferer that he will soon be well. He, however, continues, for some time, in the same dazed condition but eventually recovers. He is again examined, and it is discovered that he "has a bone," (*vide supra*) whereon the doctor applies his mouth to the place where this is said to be present, and, after making pretence of withdrawing it by suction, he spits out a bone before the face of those present. After the assembled natives are satisfied that there has been no deception, the doctor, once more applying his mouth to the part of the body whence the bone is supposed to have been removed, makes believe that it has been put back again. The novitiate, as he may now be called, then camps by himself for about two months, after which period he becomes qualified to practice on his own account.

It also appears that certain persons become wizards in virtue of some physical infirmity or mental eccentricity.

From some of the Luritchas I extracted the information, though I am doubtful whether it may be relied on, that, with them, when any man desires to become a wizard he has vertical incisions, just deep enough to bleed, made on the front of the thighs and abdomen into which the magic afflatus is supposed to enter; the old hand then initiates the new into the secrets of his arts.

Notes on some Pathological Conditions affecting White Settlers in Central Australia.

Besides taking charge of the anthropological department, the medical care of the Expedition—happily almost a sinecure as regards the health of the party—was part of my duty, and, as the medical observer seldom penetrates into Central Australia, a few notes on some peculiar pathological conditions, as affecting white men, may not be without interest.

There is a complaint, from which those long resident in the distant bush frequently suffer severely, which has received the name of the "Barcoo Sickness" or simply "Barcoo," this being the native name of the Cooper River, a large watercourse which drains south-western Queensland and, in times of flood, flows

into the Lake Eyre basin. To Queenslanders it is known as the "Belyando Spew" from the Belyando district where it is also a common complaint.

The disease consists of painless attacks of vomiting, constantly recurring immediately after ingestion of food, followed by sensations of emptiness and hunger, renewed desire to eat and a repetition of the vomiting.

If this inability to retain food upon the stomach continues, which it does for considerable periods, progressive emaciation takes place until the sufferer is reduced to the shadow of his former self. No one has yet, to my knowledge, thoroughly investigated the symptoms and the conditions which give rise to them, but they seem to depend largely upon the monotonous dietary of bush life which is most unnecessarily persisted in. My knowledge of the disease is only derived from the accounts of sufferers, but it appears that, with change of residence and particularly change of diet, the symptoms quickly pass away.

It is just possible, however, that actual contamination of the food by flies, if not the nauseous repugnance to it, induced by their constant presence in every dish, may have something to do with it. This may seem absurd, but those who have not been in Central Australia can scarcely realise what a plague of flies really means. In less than a minute I have seen a joint of meat completely concealed from view by a covering of flies an inch thick—a moving mass, in fact, resembling a swarm of bees. A mouthful can scarcely be put into the mouth without carrying some with it, and hundreds find their way into the "pannikins" of tea. To the horses and camels they become perfect torments, and one frequently sees the edges of the eyelids of these animals completely raw from their persistent attacks. No statement that I have made is in any degree exaggerated when the plague is at its worst, and this is soon after rain, though I admit, that at other times, as indeed was the case during the greater part of the Horn Expedition, they are not nearly so troublesome. On a previous journey we encounted the plague in full force.

A second condition, known by the term "Barcoo Rot," is one in which the slightest scratches or abrasions of the skin pass speedily into rapidly spreading, freely suppurating, yet superficial and often painless, circular ulcers, sometimes of extraordinary persistence. The sores in question nearly always affect the back of the hands, or, at all events, exposed parts of the arms; they may be multiple and may even apparently arise without any antecedent abrasion. On one occasion I have been myself affected, and two or three of our party suffered severely on this Expedition. After healing, the ulcers leave for a long time a conspicuous but in my experience always mobile scar.

By bushmen, "Barcoo Rot" is believed to arise from scratches caused by Mulga wood (*Acacia aneura*), which in their estimation has specially poisonous properties.

I think, however, that there are no real grounds for this unfavourable reputation. The fact is that Mulga is the tree by far the most frequently met with in Central Australia, at least this is the case between the termination of the South Australian railway system at Oodnadatta and the McDonnell Ranges, and for some distance, also, to the east and west. It frequently occurs in thick scrubs; its wood is very hard, and when the tree dies the small branches drop off with an oblique fracture and leave behind acutely pointed stumps. If, therefore, a traveller should get his hands scratched as he protects his head and face while he rides through a Mulga scrub, it is many chances to one that it will be from a Mulga spike. Gathering firewood, which is frequently dead Mulga, is another source of abrasion to the hands and so also the ever-recurring packing and unpacking of the "swags" or of the pack-loads of horse or camel.

Climatic and other conditions no doubt also play their part; for it is to be remembered that, in winter, the nights are intensely cold on the high land of the far interior. To these cold nights succeed brilliant, cloudless, sunny days having a maximum temperature of from 75° to 85° F. or more, while during the summer the daily heat is intense, very frequently reaching 110°-120°, in the shade, for days together. At early dawn, therefore, in winter, one packs up ones "swag" with fingers half frozen, and stiff and clumsy in consequence—just the conditions for the production of abrasions and chaps. In the daytime the backs of the hands or wrists, as one rides along, get baked and burnt in the hot sun's glare, and so the processes of chilling and burning succeed one another. The extraordinary dryness of the atmosphere, in these latitudes, moreover, renders the nails and skin extremely brittle and liable to crack. Here then are conditions highly favourable to the origin of ruptures and abrasions which are so often the starting point of the ulcers in question.

Various circumstances, too, are unfavourable to the healing process, such as the constant rubbing off of protecting crusts, the almost unavoidable local infection by flies, the usual absence of a suitable proportion of fresh fruit and vegetables, and the wearisome monotony, for long periods, of a diet composed mainly of salt-junk; from the jaw breaking hardness of which even the mawkish insipidity of "iron clad," as the tinned meats are termed, comes as a welcome change.

The prime factor in the healing of these ulcers is undoubtedly protection from the sun and flies. On this Expedition several of our numbers suffered considerable inconvenience through insufficient attention to these precautions which, indeed, are not always easy to carry out on such a journey. As a local application, our experience was that unguents of carbolic acid were not satisfactory and iodoform only moderately so, while under boracic acid ointment the sores healed with great rapidity even under the unavoidable stresses to which the hands were still continually subject.

By bushmen the white viscid juice of *Sarcostemma Australe* is employed as a local application to these and other sores on which it forms a sort of protective covering. I could not hear that any such use was made of the plant by the natives, though Mr. Foelsche states that those around Port Darwin apply it in a similar way to the ulcers produced by the pustules of small-pox.

The effect of the intense dryness of the climate is forcibly suggested by the peculiarly thin and desiccated aspect acquired by many bushmen after long residence in the interior. The skin of the face looks dry and harsh, and that of the nose appears tightly drawn across the bridge making this feature appear sharp and prominent.

Beyond these "Barcoo" ulcers and, in one member, an attack of "sandy blight" (ophthalmia) which is a very prevalent complaint in these dry dusty regions, the health of the party was excellent throughout the journey. Indeed, it would be impossible to imagine life under healthier conditions—an incomparable winter climate, camping in the open air with the incentive to sleep of ample physical exercise, the never failing stimulus of new scenes and interests, and perhaps, also an abstinence from all alcoholic drinks except, so long as the supply lasted, a miserable daily dose on retiring, distributed with measured accuracy by our elected custodian of the demijohn, which looked almost infinitesimal at the bottom of a pint pannikin.

We suffered no hardships in the way of thirst, as the camels afforded us the means of carrying an ample supply of drinking water for our own use in districts where the natural supplies were uncertain or unknown, but, after such copious rains as had preceded our visit, it was not often that we were disappointed in this respect. To the fastidious, however, the water occasionally met with would have been objectionable, contaminated as it often obviously was by

various animals. Unless any of us be the unconscious host of a hydatid, as a souvenir of the trip, no ill effects were experienced from drinking some very evil looking fluid.

Burial.

Earth burial is, I believe, the invariable rule in the Arunta as well as in the Luritcha tribe. I was informed, as Mr. Gillen also states, that the body is placed in the grave in a sitting position with the knees drawn up and the arms bent at the elbows; but, though I have no doubt that this is the orthodox fashion, I think they have become careless in regard to it, as they have to so many other of their customs. In the only grave—a few years old—which came under my observation there was nothing to mark its site except a few lengths of saplings laid transversely across the surface of the ground which was quite level. About two feet below and immediately over the body, was a large accumulation of two or three hundred bones of small marsupials, chiefly those of the arm and leg, each having one end embedded in a small rounded knob of Triodia resin. I believe, however, that the proper and usual custom is to throw up a rectangular or oval mound of earth over the grave, as is done in many other parts of Australia. Mr. Thornton informed me of such a case near Tempe Downs, where this mound, about two feet high, was very tastefully decorated with large green boughs laid longitudinally along a trough on the top, smaller ones being disposed transversely, with the leafy ends hanging over the sides of the mound. I believe no food is buried with the body, and the suggestion provoked laughter, as being quite an unnecessary provision.

A systematic enquiry into the geographical distribution of the Australian methods of the disposal of the dead might lead to some interesting results. Tree, or platform, burial used to be the custom with the Narinyeri tribe about the Lower Murray and Lakes Alexandrina and Albert, and the practice extended, at least, 100 miles southwards along the coast. North of the Narinyeri tribe, along the Murray, others succeed who have adopted earth burial, and this practice is with varying modification carried through the heart of the continent as far as Tennant's Creek, where tree burial comes again into force. A variety of the same plan exists throughout the tribes of the Gulf of Carpentaria* and a combination of the two at Port Darwin.†

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* Customs, Rites, etc., of the Aboriginal Tribes of the Gulf of Carpentaria, W. G. Stretton. Trans. Roy. Soc. of S.A., vol. xvii., 1893.

† Aborigines of N. Australia, P. Foelsche. Roy. Soc. of S.A., vol. v.

Mourning. (Plate XI., Fig. 7).

As a sign of mourning the face and, frequently, the chest are painted with white pigment. The hair and, amongst the men, the beard also are matted into coils with a similar material. This has an interesting parallel in the heavy white clay caps worn by widows of some of the Murray River tribes, a number of which are deposited on the surface of the grave beneath the tent-like bough shelters which are erected over them.

As with all Australians tribes, with which I am acquainted, there is the greatest reluctance to mention the name of the dead or to speak of them in any way, various circumlocutions being adopted to avoid doing so.

For further particulars concerning mourning customs amongst the Aruntas I must refer to Mr. Gillen's paper.

APPENDIX I.

System of Orthography for Native Words.

In the foregoing paper the system of orthography for native names, adopted by the Council of the Royal Geographical Society of London, has been followed as far as possible, but, as that system does not enable me to reproduce all the vowel sounds that occur in the native words which I have had to express, I have substituted my own rendering of these as giving the choice of a greater variety of sounds. I have also included the symbol 'ñ' to be used for *ny*, as equivalent to the sound of that letter in the Spanish word Señor.

In other respects the rules followed are the same as laid down by the Geographical Society, which are here repeated with the substitutions and addition mentioned. I have, however, not sought to alter the spelling of well known places which already occur in existing maps or books, though this frequently is not in conformity with the general system adopted.

1. The true sound of the word as locally pronounced will be taken as the basis of the spelling.

2. An approximation, however, to the sound is alone aimed at. A system which would attempt to represent the more delicate inflections of sound and accent would be so complicated as only to defeat itself. Those who desire a more accurate pronunciation of the written name must learn it on the spot by a study of local accent and peculiarities.

3. The broad features of the system are that vowels are pronounced as in Italian, and consonants as in English.

4. One accent only is used—the acute—to denote the syllable on which stress is laid. This is very important, as the sounds of many names are entirely altered by the misplacement of this "stress."

5. Every letter is pronounced. When two vowels come together, each one is sounded, though the result, when spoken quickly, is sometimes scarcely to be distinguished from a single sound, as in *ai*, *au*, *ei*.

6. Doubling of a vowel is only necessary where there is a distinct repetition of the single sound: thus, Nuulúa, Oosima.

7. All vowels are shortened in sound by doubling the following consonant, as in Yarra, Tanna, Mecca, Jidda, Bonny.

Amplification of the foregoing Rules.

Letters.	Pronunciation and Remarks.	Examples.
a	*ah* .. .. as in	father.
ă	*a* ... ... as in	bad.
e	*e* ... ... as in	there.
ĕ	*e* ... ... as in	pen.
i	*ie* ... ... as in	thief.
ĭ	*i* ... ... as in	sit.
o	*o* ... ... as in	bore.
ŏ	*o* . ... as in	top.
u	*oo* . ... as in	moon.
ŭ	*u* ... ... as in	cut.
ai	*y* ... ... as in	thy.
au	*ow* . ... as in	cow.
ei	*ey* ... . as in	they.
eu	*eu* .. .. as in	emeu.
oi	*oy* ... . as in	toy.
b	English *b*.	
c	is always soft, but is so nearly the sound of *s* that it should be seldom used	Celebes.
	If *Celebes* were not already recognised it would be written *Selebes*.	
ch	is always sounded as in *church*	Chingchin.
d	English *d*.	
f	English *f*; *ph* should not be used for the sound of *f*.	
	Thus, not *Haiphong*, but	Haifong, Nafa.
g	is always hard. (Soft *g* is given by j)	Galápagos.
h	is always pronounced when inserted.	
	English *j*. *Dj* should never be put for this sound ..	Japan, Jinchuen.
k	English *k*. It should always be put for the hard *c*.	
	Thus, not *Corea*, but	Korea.
kh	The Oriental gutteral	Khan.
gh	is another gutteral, as in the Turkish	Dagh, Ghazi.
m n	As in English.	
ñ	*ny* or Spanish ñ ... ... as in	Señor.
ng	has two separate sounds, the one hard as in the English word *finger*, the other as in *singer*. As these two sounds are rarely employed in the same locality, no attempt is made to distinguish between them.	
p	As in English.	
q	should never be employed; *qu* is given as *kw*	Kwangtung.
r s t v w x	As in English.	
y	is always a consonant, as in *yard*, and therefore should never be used as a terminal, *i* or *e* being substituted.	Kikúyu.
	Thus, not *Mikindány*, but	Mikindáni.
	not *Kwaly*, but	Kwale.
z	English *z*	Zulu.
	Accents should not generally be used, but where there is a very decided emphatic syllable or stress, which affects the sound of the word, it should be marked by an *acute* accent.	Tongatábu, Galápagos, Palâwan, Saráwak.

APPENDIX II.

Stature and Measurements of Living Natives.

Heights of Individuals.

		a. Males. Arunta Tribe. Crown Point.		*b.* Males. Mostly Luritcha Tribe. Tempe Downs.		*c.* Females. Mostly Luritcha Tribe. Tempe Downs.	
		Ft.	*in.*	*Ft.*	*in.*	*Ft.*	*in.*
No.	1	5	$3\frac{5}{8}$	5	$11\frac{4}{8}$	4	$9\frac{5}{8}$
,,	2	5	$7\frac{4}{8}$	5	$5\frac{2}{8}$	5	$2\frac{4}{8}$
,,	3	5	6	5	7	5	$0\frac{5}{8}$
,,	4	5	$4\frac{7}{8}$	5	$5\frac{6}{8}$	5	$1\frac{4}{8}$
,,	5	5	$5\frac{2}{8}$	5	5	5	$1\frac{3}{8}$
,,	6	5	$5\frac{1}{8}$	5	$5\frac{7}{8}$	4	$11\frac{3}{8}$
,,	7	5	$4\frac{3}{8}$	5	6	5	$0\frac{4}{8}$
,,	8	5	3	5	$5\frac{2}{8}$	5	$2\frac{2}{8}$
,,	9	5	$2\frac{4}{8}$	5	$5\frac{4}{8}$	5	$2\frac{2}{8}$
,,	10	5	$9\frac{5}{8}$	5	$8\frac{4}{8}$	5	1
,,	11	5	$7\frac{5}{8}$	5	3	4	$11\frac{4}{8}$
,,	12	5	5	5	$4\frac{2}{8}$		
,,	13	5	7	5	$8\frac{2}{8}$		
Mean Height		5	$5\frac{1}{2}$	5	$6\frac{1}{3}$	5	$0\frac{3}{4}$

Heights and Chest Measurements, in Mammary Line of 13 Adult Males at Alice Springs.

		Ft.	*in.*	*In.*
No.	1	5	$6\frac{6}{8}$	$33\frac{4}{8}$
,,	2	5	6	34
,,	3	5	$11\frac{2}{8}$	37
,,	4	5	$7\frac{4}{8}$	$33\frac{4}{8}$
,,	5	5	$3\frac{5}{8}$	33
,,	6	5	$3\frac{4}{8}$	$33\frac{2}{8}$
,,	7	5	4	$33\frac{4}{8}$
,,	8	5	$6\frac{6}{8}$	34
,,	9	5	$4\frac{3}{8}$	$31\frac{6}{8}$
,,	10	5	$4\frac{6}{8}$	$35\frac{6}{8}$
,,	11	5	4	34
,,	12	5	$4\frac{4}{8}$	$34\frac{6}{8}$
,,	13	5	$6\frac{6}{8}$	34
Mean		5	$5\frac{2}{3}$	$34\frac{1}{10}$

Mean Height of 39 Adult Males, 5 feet $5\frac{5}{6}$ inches.

MEASUREMENTS OF ARRAMŬK (ADULT MALE), CROWN POINT, TAKEN ACCORDING TO THE DIRECTIONS IN "NOTES AND QUERIES ON ANTHROPOLOGY."*

			Mm.
No.	1.	Maximum length of head	198
,,	2.	Maximum transverse breadth (in this case across temples)	138
,,	3.	Length of nose	53
,,	4.	Breadth of nose	46
,,	5.	Vertex to root of nose	124
,,	6.	Vertex to mouth	172
,,	7.	Vertex to chin	223
,,	8.	Vertex to tragus of ear	114
,,	9.	Bizygomatic breadth of face	138
,,	10.	Length of upper limb...	729
,,	11.	Length of cubit	444
,,	12.	Length of hand	186
,,	13.	Length of foot	247
,,	14.	Sitting height	773
,,	15.	Kneeling height	1180
,,	16.	Standing height	1615
,,	17.	Height to chin	1404
,,	18.	Height to sternal notch	1370
,,	19.	Malleolar height	83
,,	20.	Span of arms	1545

* This subject was rather shorter and distinctly stouter than the average; he was selected on account of his superior intelligence and patience under examination.

APPENDIX III.

Craniological Report upon Two Skulls, collected by the Horn Expedition.

By J. T. WILSON, M.B.,

Professor of Anatomy, University of Sydney.

	No. 1 Skull.	No. 2. Skull.
Race, district of collection, marks, etc.	Australian aboriginal from Alice Springs	Australian aboriginal, McDonnell Ranges,* labelled as collected by M. C. Chance
State of preservation	Pretty good, most of teeth shed, and "alveolar point" somewhat abraded	Surface considerably eroded. Mandible lacking, many teeth lost, and others fractured, outer walls of orbits and nasal septum and turbinals damaged, right zygomatic arch partly broken away, alveolar point slightly absorbed
Age	Senescent or senile	Adult
Sex	Male	Male
Cubic cap. in c.c.	1275	1283
Weight with mandible	881 grammes	Without mandible 870 grammes
Equilibrium of cranium	Anteriorly, rests on posterior parts of almost edentulous alveolar arch; and, posteriorly, on mastoid processes	Anteriorly, rests on fractured molars, posteriorly, conceptacular

* This skull was also found close to Alice Springs.

Cranial Diameters in millimetres.

Glabello-occipital	192 mm.	200 mm.
Ophryo-occipital	183	196
Nasio-occipital	186	191
Longitudinal metopic	174	194
Basi-bregmatic	132	133
Minimum frontal (inferior)	102	94
Stephanic	103	105
Asterionic	107	105
Maximum transverse	138 (squamous)	137 (squamous)
Biparietal	128	121
Biauricular	124	124
Bitemporal	134	121
Bimastoid	128	124
Basinasal	118	103

Dimensions of Foramen magnum.

Length	35 mm.	40 mm.
Breadth	33	35

Cranial Indices.

Cephalic	71·87	68·50
1st vertical (height-length)	68·87	66·50
2nd vertical (height-breadth)	95·65	97·08
Stephanic	99·03	89·52
Frontal	73·91	68·61
Foramen magnum	94·28	87·50

Curve Measurements.

Total horizontal circumference	515 mm.	534 mm.
Preauricular circumference	232	245
Vertical transverse arc (supra-auricular)	310	305
Subcerebral arc	35	32
Total frontal longit. arc	125	132
Parietal longit. arc	125	120
Supraoccipital longit. arc	85	90
Total occipital longit. arc	120	137

Facial and Cranio-facial Measurements.

Biorbital external	120 mm.	115 mm.
Biorbital internal	110	105
Bimalar	123	120
Bijugal	130	124
Bizygomatic	142	approx. 140
Ophryo-alveolar	100	96
Naso-alveolar	62	67
Spino-alveolar	16	20
Basi-alveolar	117	105
Narial height (nasiospinal)	52	49
Narial width	28	26
Nasal length (nasal bones)	25	——
Nasal breadth	19	——
Orbital height	37	35
Orbital width	44	44
Interorbital width	27	21
Distance between infraorbital foramina	60	47
Mastoid height	35	36
Auriculo-orbital distance	71	64
Palato-maxillary length	60	indeterminable, post. border broken
Palato-maxillary breadth	70	61
Distance between basion and palatine spine	51	——

Facial Indices.

Facial index	70·42	68·57
Gnathic index	99·15	101·94
Palato-maxillary index	116·66	——
Narial index	53·84	53·06
Orbital index	84·09	79·54

Mandibular Measurements.

Bicondylar width	129 mm.
Bigonial width	104
Symphysial height	38
Molar height	30 (3rd molars absorbed)
Length of ramus	74
Gonio-symphysial length	92
Breadth of ramus	40
Bigonial curve	220
Width between mental foramina	53

Table of Projection Measurements—Skull being placed on alveolo-condylar plane.

Total horizontal projection	210 mm. = 1000 parts	209 mm. = 1000 parts
Horizontal projection of anterior cranium	88 mm. or 419 parts in 1000	82 mm. or 392 parts in 1000
Horizontal projection of face	29 mm. or 138 parts in 1000	23 mm. or 110 parts in 1000
Horizontal projection of posterior cranium	93 mm. or 443 parts in 1000	104 mm. or 498 parts in 1000
Total vertical projection from vertex to symphysis menti	194 mm.	———
Vertical projection vertex to alveolar point	144 mm.	145 mm.
Vertical projections—		
Ophryon to alveolar point	94	93
Nasal spine to alveolar point	13	15
Horizontal projections—		
Ophryon to alveolar point	29	23
Nasal spine to alveolar point	7	7

Angles Determined from above projections.

Ophryo-alveolo-condylar ("facial") angle	72° 51′	79° 3′
Spino-alveolo condylar (angle of alveolar prognathism)	61° 42′	64° 59′

Angles Determined with Broca's Facial and Lateral Goniometer.

Facial angle of Jacquart (ophryo-spinal angle of Broca)	65°	73°
Facial angle of Cloquet (ophryo-alveolo-auricular)	59°	65°

"Parietal Angle" of de Quatrefages. (Determined with Parietal Goniometer).

+14° (Phaenozygous)	approx. + 14° (Phaenozygous)

The detailed method of examination followed in the case of the skulls now reported upon is the same as that I employed during the preparation of a brief report upon certain Australian Crania, which was published in 1892 as an appendix to an account of the aborigines of New South Wales, written by Dr. John Fraser for the New South Wales Commissioners of the Chicago Exhibition.

It was then stated that the methods were those of Broca, with a few exceptions. Thus, in measuring the cranial capacity, I followed as closely as possible the directions of Turner, having had opportunities of familiarising myself with that method while I occupied the position of a Demonstrator of Anatomy in his department.

Following Turner, I use a two-litre glass cylinder, graduated at intervals of 10 c.c., and I have observed the same precautions with regard to the readings as Turner notes in his practice.*

In calculating the cephalic index the glabello-occipital diameter has been employed, though other longitudinal measurements are given for sake of comparison.

In determining the gnathic index I have followed Flower and Turner, and in the case of the palato-maxillary measurements Turner's directions have been minutely carried out.

The projection of the zygomatic arches has been determined with the "parietal goniometer" of de Quatrefages, but in the case of skull No. 2 the determination was an approximate estimation, as one zygomatic arch was partly broken away.

The facial angle of Jacquart (ophryo-spinal of Broca = ophryo-spino-auricular) was determined by Broca's "facial and lateral goniometer."

The absence of median incisors enabled me to estimate the facial angle of Cloquet (ophryo-alveolo-auricular) approximately by aid of the same instrument (which is not adapted for this purpose), in the absence of a median facial goniometer.

Although the median incisors were lacking in both skulls and there was doubtless some slight erosion or absorption at the alveolar point, yet that was so slight that I have not regarded it as contra-indicating the use of the alveolar point as an important point of measurement, and as contributing to the determination of the important alveolo-condylar plane of Topinard.†

It is needless to say that the measurement of two skulls provides no basis whatever for any generalising. The excuse for the present minuteness of detail is

* Through inadvertence the number of the chilled shot used was wrongly stated in the Chicago Exhibition Report above referred to. It is there stated that No. 4 chilled shot was used, while No. 8 was in fact used, as with both Broca and Turner.

† Nearly all the instruments used are by Matthieu of Paris, and the projections have been made with the skull placed on a craniophore, strictly after Topinard's pattern.

to be found in the fact that the crania in question are undoubted examples from Central Australian tribes of which few, if any, skulls have hitherto been described.

It may be noted that the two crania differ from one another in general form to a considerable extent, this difference being well brought out in profile projection-drawings taken with Broca's craniograph. The most striking differences are those correlated with the low cephalic index and greatly depressed conceptacular region characteristic of skull No. 2.

It will be observed that, although the latter skull possesses a distinctly longer maximum longitudinal diameter (glabello-occipital) and a lower cephalic index than skull No. 1, still the latter has an equal, or even greater, total horizontal projection, and this latter feature is seen to be dependent upon a greater facial projection and a more extreme angle of facial prognathism, as evidenced both by direct measurement and by trigonometrical determinations.

Both skulls are equally phænozygous, giving an angle of + 14° with the parietal goniometer. While both are dolichocephalic, No. 2 tends towards the extreme in this direction. In both skulls the "vertical" height-length index falls distinctly below the "cephalic" breadth-length index.

The *dolicho-platycephalic* character here alluded to is interesting, since its more frequent occurrence in the southern part of Australia, and more especially in the neighbourhood of the Adelaide seaboard, has been held to indicate a racial distinction amongst the tribes of Australian aborigines. The evidence for and against this view has been summed up by Turner. He regards the evidence as inconclusive as regards any existing racial distinction of tribes now co-existing in Australia, but he is prepared to believe that the undoubted prevalence, in the south, of dolicho-platycephaly may indicate a former racial intermixture with "a people in whose crania the height index was normally below that of the breadth."

According to the "gnathic index" of Flower and Turner, neither of the skulls is prognathous, but mesognathous. Turner's average for his Australian crania was mesognathous, while Flower's (103·6) was just within the limits of prognathism. The angle expressive of this same relation (the ophryo-alveolo-condylar) has been criticised by Topinard as failing to afford a character of racial importance, such as he finds, *e.g.*, in the spino-alveolo-condylar angle, expressive of alveolar or sub-nasal prognathism.

According to the latter criterion, Australian aborigines are amongst the most prognathous of men. Topinard gives their average angle as 64° 24′. I have

found it as high as 73°, and as low as 46° 50′ in the skull of an adult female with the alveolar point and incisor teeth perfect. Here this extreme alveolar prognathism was supplemented by a very striking degree of "dental prognathism," the anterior projection of the tips of the obliquely-directed median incisors beyond the alveolar point being as much as 5 mm.

The palato-maxillary index is tolerably high, and may be correlated with the moderately low gnathic index in the same skull. Turner has already drawn attention to the connection between these factors.

The narial indices are just within the platyrhine category, and correspond pretty closely with Turner's average, which, however, was exceptionally low as compared with the averages of other observers.

Addendum.

Since the above report was written I have had an opportunity of examining a third skull collected by the Horn Expedition. It was marked as from George Gill Range. As it was considerably damaged I shall not give any detailed account of its characters. The cubic capacity could not be determined with certainty owing to imperfection of the base, but was approximately 1200 c.c. or just under.

The glabello-occipital diameter was 182 mm. and the maximum transverse 128 mm., giving a cephalic index of 70·33. The basi-bregmatic diameter was 133 mm., giving a vertical index of 73·07. This skull does not therefore exhibit the platycephalic character shown by the other two skulls, but is "metriocephalic" (Turner) or "mesoseme" in regard to this index. The "cephalic" index is, as in the others, markedly dolicho-cephalic.

APPENDIX IV.

Report on Human Skeleton from Alice Springs.

I am indebted to my colleague, Professor Watson, for the following notes on the bones of the skeleton to which skull No. 1 of Professor Wilson's report belonged.

Earth-stained (brown-red) bones of an unusually well-developed aboriginal male (Paddy O'Rafferty) believed to be about 60 years old and 5ft. 10in. in height (Gillen).

Pathological conditions, due to senility, rheumatism, syphilis, traumatism, etc., were apparent in many of the bones. An unusual peculiarity was that there were only 11 dorsal vertebræ, with a corresponding reduction in the number of the ribs, of which six, only, were vertebro-sternal. The first rib, on both sides, had a double manubrial articulation, its sternal end being bifurcated; the second rib articulated in the usual manner at the junction of the manubrium with the gladiolus. The first rib articulated behind by a demi-facet on both the 7th cervical and 1st dorsal. The last rib (11th) occupied a whole facet on the last dorsal vertebra. There was no spinous process on the last (5th) lumbar vertebra, as the laminæ had failed to unite. The sacrum was narrow, its alæ being much compressed laterally. The pelvis was narrower in every direction than that of a European.

The bones of the fore-arm and leg were actually longer than those of a European known to have been 6ft. 3in. in height. The humerus and femur were a trifle shorter. The latter bone did not show any approach to the condition known as *fémur à pilastre*. The tibiæ were slightly platycnemic: they presented in their upper third a pronounced forward curve, which threw the articular surfaces for the femoral condyles well behind the axis of the shaft. There was no corresponding curve in the fibulæ, which were as straight as those of Europeans.

It may be mentioned that the tibial curve was not due to disease, as the left tibia was unaffected by the osteo-porotic changes which obtained in its fellow.

The body of the last dorsal vertebra was ankylosed to the first lumbar; the remaining lumbar vertebræ were deformed by craggy outgrowths from the margins of their bodies, and the first piece of the coccyx was ankylosed to the last sacral vertebra. A depressed fracture about one inch from the sternal end of left clavicle was probably the cause of an irritative overgrowth of bone from the left side of the manubrium sterni.

A flattening of the left side of the thorax was due to multiple fractures in front of the angle in several of the central ribs (4th to 8th). The blades of the scapulæ were narrower from side to side than in the European, and the axillary border much more concave. The area of origin of the teres major was very prominent. The small bones of the distal segments of the limbs do not admit of any positive observations.

Measurements of the Bones of the Skeleton.

I supplement the craniological and osteological reports of Professors Wilson and Watson by tables showing the measurements of the principal remaining bones of the skeleton to which the Alice Springs skull No. 1 belongs. In this the methods adopted by Sir William Turner have been adopted throughout.*

The presence of disease in several of the bones renders the skeleton to a certain extent abnormal, but not so far as to affect those dimensions which have been given.

The interest in the figures chiefly depends upon the fact that this is, so far as I am aware, the only aboriginal skeleton that has been received from Central Australia; but as it thus forms an isolated and, to a certain extent, an abnormal example, it would be scarcely profitable to discuss their significance at any length.

I will merely observe that, in all important respects, the various indices would cause the bones to which they refer to be placed in the same groups as those to which the Australians are assigned by Turner. This is so in respect of the great length of the leg segment (dolichocnemic), medium length of radius (mesatikerkic), high pelvic or brim index (dolichopellic), long narrow sacrum (dolichohieric), and the apparently anterior concavity of the lumbar curve (koilorachic). So also the intermembral index, expressing the ratio of the length of the humerus + radius

* Report on the scientific results of the Voyage of H.M.S. *Challenger;* Bones of the Human Skeleton, Sir Wm. Turner, vol. xvi.

to that of the femur + tibia, the femoro-tibial index, expressing the length relations of the femur and tibia, and the scapular index are nearly the same as the means of Sir William Turner's measurements.

The measurements are in millimetres. Fractions of a millimetre below ·5 have been neglected, and if over that amount a unit has been added to the whole number. In the case of indices the fractions have generally been preserved.

Dimensions of Appendicular Bones.

		Left. *Mm.*		Right. *Mm.*	
Femur.	Max. length	492	...	502	
	Trochanteric length	480	...	485	
	Oblique length	486	...	496	
	Oblique trochanteric length	466	...	475	
	Angle of neck	120°	...		
Tibia.	Max. length	434	...	439	Diseased.
	Length exclusive of spine	425	...	428	Diseased.
	Condylar-astragaloid length	412	...	413	Diseased.
	Oblique length of Femur + cond. astrag. length of Tibia*	1796	...		
	Tibio-femoral index	*85·1*	...	*83·2*	
Clavicle.	Max. length	Old fracture.		149	
Scapula.	Max. length	172	...	171	
	Max. breadth	112	..	105	
	Infra-spinous length	135	...	133	
	Scapular index	*65·1*	...	*61·4*	
	Infra-spinous index	*82·9*	...	*79·9*	
Humerus.—Max. length		350	...	355	
Radius.	Max. length	279	...	283	
	Length exclusive of styloid process	270	...	277	
	Length of Humerus + Radius (max.)	629	...	638	
	Humero-radial index	79·7	...	79·7	
Ulna.	Max. length	299	...	305	
	Length exclusive of styloid process	297	...	303	
	Antebrachial index	*79·7*	...	*79·7*	
	Femoro-humeral index	*71·1*	...	*71·7*	
	Intermembral index	*68·5*	...	*68·6*	
	Claviculo-humeral index		...	*42*	

Following the rule that the stature is equal to twice these combined lengths we should have in this case a height of 5 ft. 10·7 in., which nearly corresponds with the reputed height.

Dimensions of Pelvis.

External Dimensions.	1. Breadth of pelvis*	273
	2. Height of pelvis	216
	3. *Breadth-heighth index*	*79·1*
	4. Between ant. sup. iliac spines*	231
	5. Between post. sup. iliac spines	58
	6. Between ischial tubera	135
	7. Between ischial spines	72
	8. Greatest diameter of cotyloid (both diameters equal)	51
	9. Vertical diameter of obturator foramen	53
	10. Transverse diameter of obturator foramen	32
	11. *Obturator index*	*60·3*
	12. Sub-pubic angle	60°

* Somewhat increased by disease.

Dimensions of Cavity of true pelvis.	13. Transverse diameter of brim	106
	14. Conjugate diameter of brim (antero-posterior)	101
	15. *Pelvic or Brim index*	*95·2*
	16. Oblique diameter of brim (from rt. sacro-iliac joint)	102
	From left sacro-iliac joint	97
	17. Inferior sagittal diameter	130
	18. Coccygeo-pubic diameter	
	19. Inter-tuberal diameter	96
	20. Depth of pelvic symphysis	44
	21. Depth of pelvic cavity	106

Dimensions of individual bones.	22. Height of ilium	126
	23. Breadth of ilium	165
	24. *Iliac index*	*131*
	25. Breadth of innominate bone	187
	26. Length of os pubis	64
	27. *Pubo-innominate index*	*34*
	28. Length of ischium	90
	29. *Innominate index*	*87*
	30. *Ischio-innominate index*	*42*
	31. Length of sacrum (exclusive of 1st coccygeal vertebra)	114
	32. Breadth of sacrum	103
	33. *Sacral index*	*90·3*
	34. Length of coceyx — Incomplete	—
	35. Breadth of coccyx — ,,	—

Lumbar indices.

1st Lumbar vert.	Ankylosed to last dorsal by bony overgrowth on right side	*233*
2nd Lumbar vert.		*137*
3rd Lumbar vert.		*114*
4th Lumbar vert.		*105*
5th Lumbar vert.		*92*
Mean of 5 lumbar vertebræ		*136*

I give these lumbar indices for what they are worth, but the presence of disease, though this possibly does not affect the thickness of the bodies, renders them somewhat unreliable for purposes of comparison or definition of the lumbar curve. So far as the figures go they confirm Turner's statement that the lumbar curve, in Australians as well as in other black races, is concave anteriorly.

The tibia bears on the anterior margin of the inferior articular surface, a small and obscurely marked facet; there is no corresponding facet on the neck of the astragalus, though in the position of extreme dorsiflexion of the foot there is very close-fitting of the two bones. Since my attention has been called to the existence of these facets,* I am able to support the author's statement that they are of frequent occurrence in Australian tibiæ, though his explanation of their causation for this race at least has to be reconciled with the statement made in the foot note to p. 35. The antero-posterior curvature of the external articular surface of the upper end of the tibia, to the degree of convexity of which the same author also attaches importance as being influenced by posture, is equal to 2·5 according to his graphic scale.

As bearing on the question of the increased area of origin of the tibialis posticus, associated with platycnemia, which has been previously mentioned in the text, I may mention that I have very recently had an opportunity of seeing a dissection of the leg of a Northern Territory native. In this subject the area of origin in question was wider, transversely, across the tibia than in the European but it did not extend so low down. Professor Watson informs me that he has found this to be the case in three Australian natives, two of whom were from the Northern Territory. In one of them there was a fusiform muscle, two inches long and nearly as thick as the little finger, developed in the tendinous extension from the peroneus brevis to the extensor tendon of the little toe (peroneus quinti digiti).

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* Journal Anat. and Phys., vols. xxiii and xxiv.—"Influence of posture on the form of the articular surfaces of the tibia and astragalus, etc."

APPENDIX V.

I append here a list of a few Arunta and Luritcha words. Thanks to the assistance of Mr. Gillen for the former, and of Mr. Cowle for the latter, tribe it would have been possible greatly to extend the range of these vocabularies but I have thought it is sufficient for the purposes of this paper to restrict them to a few common words. And to facilitate comparison between various vocabularies of Central Australian tribes I have practically adopted the list of words used in a similar connection on the Elder Expedition.

Column 2 of the following table contains words, used by the Arunta-Ilpma section of the Arunta tribe at Alice Springs, recorded by Mr. Gillen.

In Column 3 are a few expressions obtained from an Arunta native from Dalhousie Springs, which differ slightly or wholly from those of Column 2. For the most part, however, the words used by this native (our guide Harry) are either identical or closely similar to those of the Alice Springs blacks, and there were no difficulties in conversation between any members of the Arunta tribe with whom we came in contact.

Column 3 contains words obtained from members of the Luritcha tribe at the Illamurta police camp by Mr. Cowle.

1	2	3	4
	Arunta (Alice Springs).	Arunta (Dalhousie Springs).	Luritcha (Illamurta).
Sun	Al-lirra	Rera	Chintu
Moon	Atmeneha	Angĕdja	Pierar
Star	Kural-ya	Andúlpara	Mintannĕr*
Sky	Alkirra		Ilkarrie
Rain	Kwatcha untima, *i.c.*, Water falling		Kobbi
Cloud	Kulya		Muttarri
Day	Ertiña		Kŭllala
Night	Ingwa		Mungĕr
Hill	Intircha, Urnka		Puli
Land	Itchirna		

* There are special names also for various constellations, which are well recognised.

1	2 Arunta (Alice Springs).	3 Arunta (Dalhousie Springs).	4 Luritcha (Illamurta).
Sand	Urlpa = Sandhill		Mŭnta
Stone	Apperta		Puli
Water	Kwatcha	Kwaitcha	Kobbi
Hot	Utirna		Luru
Cold	Hŭlcha		Worri
Trees	Irna = Sticks		
Fish	Irpunga		Antipieni
Dog	Ŏknulya		Puppa
Kangaroo	Ochirra, Udnirra	Auēra	Mŭrlu
Fire	Ura	Urra	Worru
House = Native Wurley	Iltha, Mirra		Wattuti
Spear	Ilcherta	Rángera	Kurthi
Club	Kutirra	Tura	
Spear-thrower	Miara	Ámera	
Boomerang	Illya	Uramanja	Kurli
Good	Al-yirra, Mura		Induta, Ul-yarra
Bad	Akurna		Kwie-ír
Great	Ŏknirra		Puntu
Small	Kupitchi		Wiemar
Man	Ertwa	Urta	Pŭrtu
Woman	Wunka	Urcŭtcha	Kunka
Old Woman	Umbwa		Kunka-chilpi, Worpulyer
Boy	Ulpmerka		
Boy (little)	Wiai		Wiemar, Wiemukutar
Girl (little)	Kwiai		Kwieni-wiemar, Kuntchippa
Girl (single)	Lukwurriña		
Father	Ŏknica	Agnica	Kartuna, Kartu
Mother	Mica		Garkuna
Husband	Ŭnawa		Kuri
Wife	Ŭnawa		Kuri
Head	Okopperta	Akápŭta	Kŭtu

1	2 Arunta (Alice Springs).	3 Arunta (Dalhousie Springs).	4 Luritcha (Illamurta).
Mouth	Orŏkerla	Arrákŭta	Tar
Hand	Iltcha		Mŭrra
Fingers	Iltcha	Iltcha-kurka	Mŭrra-mŭmmera
Thumb	Iltcha makwa		
Eyes	Alkna	Ulgna	Kuru
Hair	Alta		Entu
Tongue	Alliña		Tŭllil
Teeth	Artieta	Atieta	Kartieti
Ear	Ilpókerta, Ilpa		Pinna
Nose	Alla	Ulla	Mulĕr
Foot	Inga	Inka	Chinna
Blood	Irkna, Aeltwuwa		Urkai-ĕr, Urkĕr
Bone	Inkwurna		Tŭrkar
I	Yinga		Ai-ulĕr
Thou (you)	Unga, Unta		Nuentu, Nura
He	Urra		
She	Urra		
It	Ĕkurirra		
We	Anuna		
Ye (you)	Arankirra		
They	Naakwa, Tullarea		
My	Unnieka		
My foot	Inga yinga or Inga unnieka		Chinna ai-ulĕr
Your	Unta		
Your foot	Inga unta		Chinna nuentu
His	Ekurirra		
His foot	Inga ekurirra		
To die	Illuma		Upar, Urinni (lost)
To hear	Wuma		Kulinni
To see	Irrima		Mŭnganni
To sit	Ŭmnima		Ninnani
To give	Inthi		Yungani, Yunga
One	Nintha	Ñunta	Kutu-kutu
Two	Thrama, Thĕrra	Tĕra	Kutarra

1	2 Arunta (Alice Springs).	3 Arunta (Dalhousie Springs).	4 Luritcha (Hlamurta).
Three	Urapitcha	Tĕra-ma-ñunta (two and one) or Urpudjama	Mŭnkurĕr or Kutarra-kutu
Four	Thĕranka-thĕrra (Two and two)	Tĕra-ma-tĕra (two and two)	For numbers beyond three the word "Tutar" (mob is generally used unless they should be indicated on the fingers.) Ten would be expressed by uttering the word "tutar" and by holding up the fingers of both hands.
Five	Thĕranka-therra-ñintha (Two, two and one)		
	All other numbers are expressed by Ŏknirra = a great number		

NOTES ON SOME MANNERS AND CUSTOMS

OF THE

ABORIGINES OF THE McDONNELL RANGES BELONGING TO THE ARUNTA TRIBE.

By F. J. GILLEN, Special Magistrate and Sub-Protector of Aborigines, Alice Springs.

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CONTENTS.

Tribal Government.

The Arunta tribe is divided into groups or subdivisions, each being governed by an Alartŭnja or chief ruler. The subdivision of which I write particularly is known as the Arunta-Ilpma.* The position may be hereditary and, in the case of this particular group, the title has descended in the direct line for four generations. The Alartŭnja, however, when dying, or when too old to lead, can nominate the relative he considers most fitted to do so. The Arunta tribe is scattered over a great extent of country east and west and north and south of Alice Springs. The boundaries of the dominion of each Alartŭnja are clearly understood, and all disputes are, within them, settled by him. In the case of the tribe being menaced by an enemy, the Alartŭnjas consult together and agree upon a leader, who for the time being is supreme. Occasionally the groups fight amongst themselves.

Social Organisation of the Tribe and Some Laws Relating thereto.

The McDonnell Range tribe of which I am writing is divided into four classes, viz., Panunga, Purula, Pultarra, and Kumarra.† The Panunga and Purula classes intermarry, but neither may marry nor cohabit with a Pultarra or Kumarra; these two latter classes intermarry. Any native breaking the class laws does so at the risk of his or her life. I have known instances where a breach of these laws was punished by death or severe mutilation. The women, especially, are severely dealt with, their lives not being considered of so much value as those of the men.

The most contemptuous term in the native tongue is "*eterka*," which signifies an adulterer or prostitute, or one who cohabits within the forbidden degrees or classes.

* Since the above was written I have found that the word Ilpma or Ulpma applies also to other groups whose language is not quite like that of the majority of the Arunta tribe.

† The system of orthography for native words is the same as that adopted in my own paper. *Vide* Appendix I. —(E.C.S.).

A Panunga man marries a Purula woman; the offspring (*amba kwerka*) is Pultarra.

A Purula man marries a Panunga woman; the offspring is Kumarra.

A Kumarra man marries a Pultarra woman; the offspring is Purula.

A Pultarra man marries a Kumarra woman; the offspring is Panunga.

The Kumarra and Purula are always separated from the Panunga and Pultarra in camp, and, if the camping ground happens to be on a creek, the two camps are formed on opposite sides, but even in the open plain there is a clear line of separation.

At every camp there is a meeting ground (*Ŭn-ŭnkŭncha*) set apart, where the men assemble to hold social converse. No lubra must intrude upon this spot, whether the men are present or not. The lubras, also, have at each camp a general meeting place, which they call *erlukwerra;* here all the unattached women and children of the tribe camp together. No man would think of visiting this camp; it is, in fact, sacred against intrusion from male adults, though children are allowed to go anywhere.

Kumarra and Purula women are allowed to talk to Panunga and Pultarra men. Panunga and Pultarra women speak with Purula and Kumarra men.

Where the head of a family is Panunga (his lubra, of course, being Purula), men of the Panunga and Pultarra castes may visit his camp (*mirra*), but no man of Kumarra or Purula castes may do so. Women of the Purula and Kumarra* castes may visit the *mirra* at any time, so also may the sister of the man if she be older, but not otherwise. Panunga women may also visit the *mirra* during the absence of the man.

Pultarra women, being *mūra*† to the Panunga man, must not visit his *mirra* under any circumstances, nor must they come anywhere near it.

When a Purula is head of a family (his wife being a Panunga) his *mirra* is visited only by men of the Purula and Kumarra classes. Pultarra and Panunga women visit at any time, and a Purula woman may visit in his absence. A Kumarra woman may not visit at all, she being *mūra*.

A Pultarra husband and Kumarra wife are visited by Panunga and Pultarra men only. Purula and Kumarra women visit at any time; Pultarra women only

* Note the association of Panunga with Pultarra and Purula with Kumarra.—(E.C.S.).

† *Vide* next section.

in the absence of the husband (*ertwaa*). A Panunga woman may not visit at all, she being *mūra*.

A Kumarra husband and Pultarra wife are visited by Purula and Kumarra males only. Pultarra and Panunga women visit at any time; Kumarra women only in the absence of the husband. A Purula woman may not visit at all, she being *mūra*.

The law with reference to the privilege of elder sisters applies to all classes.

"*Mūra.*"

No man may speak to, look at, or go anywhere near a woman of the class to which the mother of his wife, or wives, belongs. All women of this class are *mūra* to him. The same law applies to the women—that is to say she must not speak to, look at, or go near any man of the class from which the husband of a daughter would be drawn. This law is strictly carried out even now. A man or woman *mūra* to each other will make a detour of half a mile rather than risk getting within distinguishing distance of the features.

Marriage Customs.

There is no limit to the number of wives a man may have; I knew one to possess seven. Marriage by arrangement is the law, and the rule, in this section of the tribe, though infringements occasionally occur, as for instance by stealing or taking forcible possession, in which case the man has to take the consequences of his act.

Occasionally wives are taken from their husbands by men of another group of the same tribe. When this happens a fight invariably ensues, and the woman remains with the victor.

Young girls are sometimes handed over to their assigned husbands when not more than nine or ten years old, but this only occurs when the husband is a single man (*ŭngŭnjipinna*). The girl inhabits the same wurley (*mirra*) as the man, but does not cohabit until she has attained to puberty. As soon as the union has been consummated, the mother of the girl must be informed, and the young woman must no longer enjoy the privilege of speaking to her father. She is now *ŭnawa ŭnkathinna*—a wife and married woman. A married man is known as *ŏpmirunga*.

A man may, if he pleases, make a present of his wife to another man of his class. This is frequently done.

Unfaithfulness in a wife is frequently punished by cauterizing the vulva in a horrible manner.

As a general rule a young girl remains in her father's camp until her breasts are well developed. If she has been assigned to a man, he is then invited to take her without further ceremony. In the rare cases where the girl has not been assigned or, if the intended husband, perhaps a member of a distant group, be not available, she is sent to the lubras' camp (*erlukweрra*). Here are camped all the unattached females of the tribe. It very often happens that the girl has been given to a man who already possesses one or more wives, and these sometimes strenuously object to a further addition. In such a case, rather than disturb the harmony of his domestic life, the peace-loving blackfellow sends the girl to the *erlukweрra*, where she awaits his pleasure. Being still a single girl, she is known as *erlukwŭrrŭriña*.

The possible daughters of unmarried women are generally assigned, it may be years, before birth, so that it often happens that a woman is mother-in-law (*tualcha-mura*) to a man before she has a child, but whenever the female child is born she belongs irrevocably to the man to whom she has been assigned.

The mother-in-law is obliged to furnish the man who marries her eldest daughter, or the man to whom this daughter is assigned, with all her spare hair for the purpose of making string for his head-dress or waist-girdle (*uleara*). She must not give her hair to anyone else, nor must the actual or prospective son-in-law accept hair from any other woman. This offering of hair is generally made with some little ceremony by the father-in-law, or, if the mother-in-law be a widow, it is delivered through the daughter.

Amongst the southern portion of this tribe when a girl is old enough to enter into sexual relations with her assigned husband, and when he has expressed a wish to cohabit with her, she is taken into the bush by the men of her husband's class and then forcibly held down by four men, while a flat piece of wood with a blunt point at each end, prepared for the occasion, is thrust into the vagina. This operation being completed, the men in turn have connection with the girl, who is then instructed to go to her husband's camp, where he awaits her arrival, having remained there while the brutal programme is taking place. Here, at Alice Springs, the practice is less brutal, for though a stick is sometimes used, it is the husband who performs the operation in his own camp, and he alone has the subsequent relations.

Forbidden Degrees of Kindred.

A man may marry as many of his wife's sisters (tribal) as he can secure.

He may not marry, or even speak to, his mother-in-law; nor can he marry the sister of his wife's father or mother. For example, if I am a Panunga man my wife must be a Purula woman. The mother of a Purula woman is a Pultarra and the father is a Kumarra—that is, the father and mother of my wife, and consequently their sisters, belong to classes with which I cannot intermarry.

A man may speak to his mother at all times, but he may not speak to his sister if she be younger than himself—of course this prohibition only applies to grown up men and women.

A father (*ŏkniea*) may not speak to his daughter (*kwiai ŏkatchi*, girl child) after she becomes a woman. She may visit his camp at night and talk to her mother apart, but father and daughter must not look at each other.

When the sisters are older than the brothers they are known as *kungari*, and have the privilege of speaking to their brothers at all times; but a younger sister, *ŏknaitcha*, may not speak to or look at her brother after both are grown up.

Birth.

(*Amba-kwerka*).

When a child is about to be born, the woman leaves her own camp and goes to the *erlukwerra* (camp of the single women), where she remains for three or four weeks after childbirth. The father is not permitted to see the child until the mother returns to his camp.

Abortion is frequently produced by tying a belt tightly round the waist.

Infanticide.

This is a common practice when the children arrive at short intervals, but healthy male children are spared if it be possible to rear them. A mother with a child of eighteen months seldom undertakes to rear a girl infant; she considers that she cannot attend to two babies at once, and calmly sacrifices the last arrival by choking it with sand. Children are suckled up to the age of three years. I have only known of one case of twins—half-castes*—both of which were destroyed.

* This is the case mentioned in the preceding paper.—(E.C.S.)

Naming of Children.

Young native children are named after animals or parts of animals, trees, bushes, inanimate things, natural features and personal peculiarities. This name may be, and is usually, kept, but if a personal characteristic should develope later, they are often re-named, the original being dropped. A child born with a deformed foot would bear through life the name *Inga kurta kurta* (crooked-foot); cross-eyed children—rare occurrences—are invariably called *Alkna kurta kurta* (crooked eyes); web-fingered children are similarly named (*Arroka*) after the deformity. A man or woman with a remarkably long foot would be known as *Inga alpunga* (long foot), and left-handed persons are called *Akwaa thaka* (left-handed).

Mourning Customs.

When a man dies the father of the deceased throws himself on to the body, where he is cruelly beaten by the old women of the tribe, who attack him savagely with yam-sticks (*atnimma*). He receives their attacks without defence or remonstrance and, to all appearance, is too much overcome with grief to be capable of experiencing physical pain. The men of the class of the deceased destroy their weapons and even their clothing.

As a sign of mourning the natives of both sexes paint their bodies with white clay (kaolin) and plaster their hair with the same material.

When a Panunga man dies all the men of the Kumarra class cut themselves on the shoulders and sometimes on the legs with stone knives. In addition to this two Kumarras stand out and belabour each others' heads in turn with yam-sticks (*atnimma*) until one or both are unable to bear any more; the wonder is that they can bear so much, for their heads present an awful spectacle.

On the death of a Kumarra the Panungas mourn for him in the same manner. A Pultarra is similarly mourned for by the Purulas, who in turn are mourned for by the Pultarras.

When a woman dies her mother mutilates herself horribly with a stone knife, and submits to being mercilessly beaten about the head by two women of her own class; for instance, if a Panunga woman dies her mother—a Kumarra—mutilates herself and is beaten by two Kumarra women.

A man goes into mourning for his wife by painting his body, but there is no mutilation, nor do the other men of the tribe paint themselves in any way.

When a husband dies the widow (*inperla*) paints herself all over the body with powdered pipeclay (generally white, but sometimes yellow), her hair and face are also painted. She is supposed to continue the use of pipeclay for about a year, during which time she must be careful not to exhibit herself to any man of the tribe, except to her own sons, unless at a considerable distance. She must be particularly careful to avoid the brother of her deceased husband, who would be justified in killing her, at sight, for the wilful breach of this law.

During her period of mourning the widow attends to the grave of deceased, keeps the ground clear around it by sweeping, and sometimes decorates it with quartz and pebbles. After the lapse of about a year the blacks take the widow and the dead man's brother, if he have one, to the grave, where the former deposits a number of wallaby and kangaroo bones. She prostrates herself on the grave, rubs off the pipeclay and then paints herself all over with red ochre. She is now taken charge of by her brother-in-law, who henceforth will be to her as a fraternal guardian. Some considerable time must elapse before the widow may take another husband, and in the meantime strict chastity is enforced. An applicant for her hand must first ask the brother-in-law guardian, who, if favourably inclined, will lay the matter before the men of the interested class, and they decide as they think best. If they say yes, the woman is taken at once, without consideration of her own wishes; if, as sometimes happens, she resists, she is cruelly beaten and cut about. She has no appeal against the will of her lord and master, and it is her duty to render absolute obedience to the man to whom she has been allotted. As a general rule she makes an obedient wife, though in rare instances she "wears the breeches" and keeps her lord and master in subjection.

When a warrior is dying the men in camp throw themselves on the body and howl piteously; death is very often precipitated by this practice.

Burial.

On the occurrence of a death a grave is dug immediately, and interment takes place within an hour of the decease.

The body is doubled up and placed, in a sitting position, in the grave (*ippirta*), which is generally a round hole.

A dead native's name is never mentioned by the blacks, and the older men will not even look at the photograph of a deceased person.

The Rites of Circumcision and Subincision.—Lartna and Arrilta.

When a youth (*ŭlpmerka*) is to be operated upon he is taken away from the camp, on some pretext or other, early in the morning of the day upon which the all-important ceremony is to begin. Food has previously been collected in some quantity, and during the day the natives in camp employ their time preparing this, occasionally varying the monotony by chanting a corrobboree (*quaapara*), to which the lubras only dance. At sundown the boy is brought back to camp still unconscious of what is in store for him, and is persuaded by some of the bachelor young men to camp with them for the night. The camp is full of suppressed excitement, no other native rite excites so much interest. In the middle of the night, the brother of the *ŭlpmerka* or, in the absence of a brother, some male relative, after assuring himself that the *ŭlpmerka* is sound asleep, proceeds to awaken the sleeping members of the tribe, care being taken not to disturb the youth. When all are awake, the natives assemble quietly in the centre of the camp, all being provided with corrobboree wands; the lubras separate and stand in silence, while the men clear off the grass and otherwise prepare the chosen spot (*appūla*). When this is done all sit down, three men and two young gins are then sent to awaken the victim and bring him before the assembly. The two gins take the lead, each carrying an *alparra* (a scooped out piece of wood used for carrying food and water), creep stealthily towards the sleeping boy and rouse him suddenly by striking him sharply with their *alparras*, at the same time they sing out "ūt-chai!" The boy, startled and dazed, springs to his feet; he is quickly seized by the three men who are in close attendance, who tell him that the time has arrived when he should no longer be a mere *ŭlpmerka*. The assembled natives, as soon as they hear the "ūt-chai" of the lubras, start singing and dancing, the men sing and the women dance. The boy is at once taken to the centre of the assembly, his hair is for the first time tied up at the back; previous to this, as an *ŭlpmerka*, his hairdressing must be confined to a knob in front. A belt woven from human hair is wound round his waist, the singing continuing while the boy is being decorated with the first emblems of approaching manhood (*ertwa kuka*).

He is now taken away to a specially prepared camp by certain elderly members of the tribe, chosen for the purpose, who carefully paint and decorate him with the down of the eagle-hawk (*Aquila audax*), which is made to adhere to the skin with warm blood drawn from the urethra of one of the performers. Next morning the youth is taken back to the centre of the assembly, where he is placed alone and standing. Carrying fire-sticks, they place rings, woven of fur and vegetable down,

round the boy's neck and arms, and sometimes over and under the shoulder; the fire-sticks are then handed to him, the lubras saying: "Take care of the fire; keep to your own camp." He is then taken into the bush, where he is carefully guarded until evening, when he is brought back and again placed in the centre of the assembly, where he lies down and listens to the weird music of his kindred for half the night. This kind of programme continues for three or four nights, until the victim is in a state of nervous exhaustion and the other members of the tribe are beginning to feel worn out with their exertions; for, from the time of seizure of the boy until now, the corrobboree has been almost continuous.

On the day upon which the operation is to take place a number of the men leave the camp at mid-day and return later in the afternoon, concealing in their approach the *ŭlpmerka*, who follows in their rear. During the day spears are struck vertically into the ground in two nearly parallel rows (*arachitta*), and these are bedecked with gum leaves (Plate XVI., Fig. 21). Between the lines a sunken path is carefully prepared and swept. Notice of the approach of the boy is given to the lubras some time during the afternoon, when these immediately assemble between the lines, dance to the chanting of some men told off for the purpose, and strip the leaves off the spears (Plate XVI., Fig. 23). This dance is called "*ŭnthippa*" Presently the blacks who are bringing in the boy are heard to approach, chanting a *quaapara* in warlike tones; each man is armed with a piece of green gum bark, which he throws at the dancing group of lubras as he approaches, still singing. The throwing of the bark, which sometimes effects nasty wounds, is the signal for the lubras to disperse and return to their camp, these being of course out of sight of the *quaapara* ground. The lubras being well out of view, the boy is brought in and placed at the narrower end of the lines, where a small shelter of green branches has been erected (Plate XVI., Fig. 22); the old paint and decorative designs are rubbed off, and the victim is painted anew with red and yellow ochre mixed with fat. No human or other blood is used. The youth is now left to chew the cud of reflection until nearly sundown, the men chanting, from time to time, at the other end of the lines, but meanwhile keeping a keen eye on their victim. Their spare time is taken up in elaborate additions to their toilet in the shape of red and yellow ochre and powdered charcoal. About sundown the lubras are invited to come back, and they take up a position standing on each side of the sunken path, while the men, who remain sitting, knock their shields on the ground several times, chanting noisily the while. Two men then jump up suddenly; one goes to the right and takes up a position on the side of the trench at its middle, the other man a corresponding position on the opposite side.

For a moment or two they remain facing one another and then run quickly to where the boy is concealed, the brake of boughs is thrown aside and the boy exposed to view. He now joins the other two blacks, and the three, advancing on all-fours and jumping like kangaroos, but in perfect silence, start down the line for the opposite or wider end. When they get about half-way the boy goes on alone while the two men diverge, go outside of the lines and make a circuit before re-joining their fellows. The boy continues his kangaroo-like progress keeping to the centre of the sunken track until he collides with a man on the edge of the assembly who is placed there. This man, who has until now been seated, rolls over on to his back and lies quite still; the boy immediately lies on the top of him; perfect silence is maintained and every face is lit up with interest. The old warrior who directs the ceremony now calls two old lubras, who come, evidently considering themselves highly honoured, and these at once begin to rub the paint off the boy's back as he lies upon the recumbent blackfellow. When the old women have completed their task, a number of the men scatter out into the darkness, where they decorate themselves by tying to their ankles and calves long sticks, to which branches of gum trees have been tied. These sticks, from six to eight feet long, run up in front of the arms, by which they are grasped to the side of the body. They are prepared during the day out of sight of the lubras.

When thus decorated the men return and general dancing takes place, in which the sexes intermingle. The lubras, as they dance, strip the leaves off the sticks attached to the legs and work themselves into a wild state of excitement, singing,

At-nín-tu ráppira ka perkáa-a-a
Ŏk naar intá
Yur a púncha kwi
Yur a púncha kwi

while the males remain comparatively calm. When this remarkable stripping-dance begins the *ŭlpmerka* gets off the blackfellow and sits up watching the dance. Suddenly the dance ceases, and the noise of a humming-stick or bull-roarer (*irula*), wielded by some man a little distance off, warns the lubras and children to retire to their camps; this they do without a moment's delay. No lubra or picaninny of either sex is ever allowed to see the humming-sticks. Only those who have attained to the degree of *Ertwa kurka*—that is to say, of perfect manhood—are allowed to look upon the sacred "*Irula.*" So soon as all lubras and children are out of sight a large fire is made, around which all the men congregate. One warrior produces a fighting shield, "*Alkwurta*" (generally made from the light elastic wood of Stuart's Bean Tree), and kneeling

on one knee holds the shield over his head. Two men then seize the *ŭlpmerka*, who generally goes quietly, and place him in the hollow of the shield, where he is held by two others. The operating "medicine-man," *railtchawa*, seizes the penis, saying, "Etrirra ítchela warái wula nin ippira twa-el amŭnga"—("Don't be frightened; you will be a man directly"). The glans penis is then pushed back with the finger, the foreskin is pulled forwards and stretched as tightly as possible, and then quickly hacked off with a small stone knife (see explanation to Plate XVII.). While the operation is being performed the warriors who surround the subject sing in fierce tones, the beards being pushed between the teeth :—

Irri yulta yulta rai
Ŭl katchera ŭl katch ar-rai
Irri yulta yulta rai
Ŭl katchera ŭl katch ai.*

The patient rarely displays any emotion under the knife. In the many instances I have witnessed I have never heard a boy cry out; the most I could detect was a slight shudder at the contact of the knife. The subject, having undergone this operation of circumcision (*lartna*), is no longer an *ŭlpmerka*, but becomes known as an *arrakurta*.

After the operation he sits in a dazed state for a few minutes while he receives the congratulations of the warriors, and is then taken to the bush by some relation or friend told off for the purpose, where he must remain in retirement until the wound heals. He is furnished with a bundle of large *irula* (not used for making a humming noise), which he carries with him and which are bestowed in order to promote speedy recovery. These sticks belong to the class of objects known as *Churiña*, which will be dealt with in a separate section. He must not on any account be seen by a woman of the tribe during his convalescence, and the women are careful to avoid the quarter in which the *arrakurta* is supposed to be located. The wound generally takes from six to eight weeks to heal.

Before the *arrakurta* can be admitted to the full privileges of manhood he must further undergo the operation of "*Arrilta*," or subincision, one of the most painful and brutal practices I have ever witnessed.

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* In an account, by an eye-witness, of a circumcision ceremony at Claraville, on the Eastern McDonnells (about sixty miles from Alice Springs), which differs from the preceding in the preliminary details, it is related that the prepuce, after removal, is handed round to the young men, who, in turn, pinch up between the finger and thumb, a piece, which is cut off by the operator and eaten by them. The blood which flows from the wound is made to drip into the hollow of the haft of a shield, and, after the ceremony, this is passed round amongst the lubras, who dip their finger into the blood and anoint the pudenda until the supply is exhausted.—(E.C.S.).

When the guardian of the *arrakurta* reports that his ward has sufficiently recovered from the circumcision, the men assemble and sing a certain corrobboree known as the "*Arrilta.*"

Únkirra merlu merlu
Únkirra merlu merlu
Kuparie aani
Arrilta kupari aani.

The *arrakurta* is brought into a spot, some distance from the main camp, where the operation is to take place. A large spear is swathed in the twigs and leaves of green bushes, then the human hair-string of the girdles of the warriors is wound round its full length, with the exception of a few inches at the end, which are stuck into the ground; a bunch of feathers of the eagle-hawk (*Aquila audax*) (*iritcha*) is fastened to the top, and the whole surface is decorated with alternate rings of red and white downy material obtained from certain plants,* and a number of *irula* are tied to the pole. When this pole, which is called *nartŭnja* (Plates XVII. and XVIII., Figs. 25 and 26), is erected, the men congregate around it and sing the *arrilta* corrobboree periodically all night. No woman of the tribe is allowed within sight of the camp, nor may she under penalty of death look upon the "*nartŭnja.*" The operation is nearly always performed at daylight, when the *arrakurta* is suddenly seized and placed on the back of a man, who lies down for the purpose. Another man takes up a position astride of the subject, grasps the glans penis, and puts the urethra on the stretch. The operator, who is often, but not always, chief of a group, then approaches, and with his stone knife quickly but carefully lays open the urethra from below for the whole length of the penis (Plate XVIII., Fig. 26). The operation is a very painful one and sometimes the patient struggles violently, in which case the warriors say: "Amba kwerka etrirra warri inthilla" ("You are not a child now, don't be frightened, don't cry out"). The father of the boy (*okniea*) and, sometimes, two relatives, are specially decorated with paint for the occasion, or, in the father's absence, another male relative, or sometimes two relatives, takes his place. The part of the father or of his substitutes is merely passive; he is in the proud and enviable position of one who adds a warrior to his tribe, and, throughout the proceedings, he maintains a dignified silence, while the other warriors treat him with the greatest respect. His upper arms are adorned with alternate rings of down and charcoal, corresponding rings of the same substances are painted on the chest and back, the forehead is smeared with a mixture of charcoal and grease, the

* The involucral hairs of *Portulaca filifolia.*—(E.C.S.).

eyebrows and cheeks are decorated with down, and pieces of the same material are scattered through the hair (Plate XVII., Fig. 25). The other natives are merely painted with red and yellow ochre. As soon as the operation is performed, the pole is taken down, stripped and the unwound hair-girdles are restored to their respective owners; but, before this is done, the young man, who has now become an *ertwa kurka*, is congratulated and fondled by the men. He cannot, however, frequent the main camp until his wounds are healed, so he retires once more to the bush (Plate XIX., Fig. 28). In a few weeks his healing has taken place—indeed this second wound generally heals more quickly than the first—the fact is notified to the warriors that their young brother is ready for admission to their order. The men assemble at some little distance from the general camp and in the direction towards which the newly made *ertwa kurka* is located and sing with great gusto, the chief leading the *quaapara* :—

"Chŭk-ŭr-rokerai yaa li chaakaa-a
Yama kauk waa-a
Inkwúrkna inkwúrkna atnai
Inkwúrkna inkwúrkna atnai."

The lubras, hearing this chant, assemble in the main camp and begin dancing to the time kept by the men, but they do not sing themselves. After a certain amount of preliminary chanting the guardian of the young warrior brings in his charge and presents him, as a man and a warrior, to the assembled males, who, with shouts of rejoicing, escort him to the main camp, where he is presented to the lubras waiting at a cleared place close to the camp. The young man runs round them quickly in a circle, while the women make a noise resembling that of the "humming-sticks" (*irula*). He then suddenly bounds away into the bush, whither he is followed by a number of men who camp with him for the night. Next morning he is again escorted to the camp, and now carries a shield (*alkwurta*), which he displays in an attitude of defence. As he approaches the camp all the young women of the same class (phratry) as himself throw pieces of green gum (Eucalyptus) bark at him, which he wards of with his shield. When the supply of bark is exhausted he turns his back upon them for a minute or two and then runs back to the men, who have remained at a little distance in the rear chanting vigorously.

He is now a fully-fledged man, entitled to wear his hair tied up behind; the pubes is decorated with a diminutive, fan-shaped tassel made of fur, dyed white, and human hair; a hair girdle is henceforth worn round the waist and, if he be a dandy, fur armlets adorn his biceps (Plate XVIII., Fig. 27). In all corrobborees

he is now entitled to take a principal part; he may take unto himself a wife, and in all probability one, perhaps two, have already been assigned to him. For two or three days he is the cynosure of all eyes—the most interesting figure in the camp. A corrobboree takes place every night, in which he takes part, and deeds of daring done by the most famous living warriors of the tribe are related for his benefit. He is carefully instructed in class laws, impressed with the dignity of his position as an *ertwa ḳurka*, and henceforth he must only speak to such women of the tribe as are not of the tabooed classes; he must not even look in the direction of these.

Until the rites of *lartna* and *arrilta* are performed a native is not allowed to have a wife; this bar is, however, sometimes broken by natives in the employ of white men, who are, to a certain extent, in a position to defy tribal laws, but sooner or later they are bound to submit. No grown man can, for very long, put up with the sneers and contempt of his race, and such an offender is never permitted to take part in a corrobboree, nor will the men allow him to discuss tribal matters with them. I have never known a black with sufficient hardihood to hold out against the performance of these rites for more than a year or two.

Quaapara or Corrobboree.

Under this head the ordinary dancing festivals, usually spoken of as corrobborees, are referred to. The blacks, in addition to these, perform certain ceremonies regarded as sacred in character and associated with, for example, the promotion of the supply of certain food-plants and animals. These are performed at certain times, and are of much greater significance than the ordinary corrobborees, which anyone is allowed to witness. Two of these ceremonies are described under separate headings.

Ordinary *quaaparas* are held at a neutral ground specially chosen—generally at some distance from the main camps—where all castes and both sexes may attend. Any locality may be chosen, but there are certain favourite spots to which members of more than one group of a tribe may repair for corrobborees.

The songs of this tribe, sung at the *quaapara*, are merely a collection of sounds and cannot be translated. They have no actual meaning, but are merely a means of expressing such music as there is in the native mind. All *quaaparas* are supposed to be imparted in dreams.

Sacred Ceremonies.

(*a*) Food-Producing Ceremonies. Intitchiuma.

All ceremonies of this kind are called *Intitchiuma*. Of these one of the most solemn and important is the *Udnirringita* festival, which is believed to have the effect of enormously increasing the natural supply of the large tree grub, of which the natives are very fond. It is in fact a delicacy which many white men appreciate.

The ceremony takes place every summer, and is carried out by the men of the Pultarra and Panunga classes under the leadership and direction of the Alartŭnja. Women are not permitted to witness the ceremony, nor are men of the Kumarra and Purula classes* allowed to attend. When it is about to begin, the men of the Pultarra and Panunga classes start from the camp at sundown (*alknŭrrika*), proceeding in single file and taking the places allotted to them by the Alartŭnja, who sometimes walks at the head and sometimes at the side of the column. The men are all unarmed and undecorated, even the ordinary hair girdle (*uleara-ilippa*) is discarded, and abstinence from food and water is strictly enjoined until the return to camp. They continue travelling until they reach the spot where the festival of *Intichiuma* is invariably celebrated, which is generally some miles from the camping grounds. Here they camp for the night. At daylight a round hole, about five feet deep by two feet six inches in diameter, is dug by men told off, for the purpose, by the chief. When this is completed to his satisfaction, the accumulated earth is scattered in all directions. Each man in turn then gets into the hole, and, leaning against the wall, submits to being struck twice heavily in the abdomen with a large stone wielded by the Alartŭnja, who, while striking, says: "Ŭnga mŭrna oknirra ŭlquinna" ("You have eaten plenty food.")

When all have submitted to the painful stone ordeal, they retire to a shady spot (*ulya*), where they decorate themselves most elaborately with red and yellow ochre. A band of fur-string (*itularra*) dyed white is placed across the top of the forehead (*urta*), and underneath this they stick a number of green leaves, which entirely cover the forehead. The crown of the head (*kŏpmirra*) is decorated with a bunch of white cockatoo (*ŭngwe ŭlkinna*) feathers, and pieces of green bush are fastened in the armlets (*kulchia*). When the process of decoration is finished, they return to camp led by the Alartŭnja, again walking in single file and in silence. Each man's place has been allotted to him, and all walk with measured step. The lubras, the very old men of all classes, and all the Purula and Kumarra are in

* *Vide* footnote on p. 163.

waiting for the return of the celebrants. Food has been collected and cooked during the day. It is now nearly sundown (*alknŭrrika*) and the grub-makers have been without food or water since the same hour yesterday. When the procession is seen approaching the camp, the oldest Panunga veteran steps out alone and chants :—

Ilkna pŭng kwai
Yaalan ni nai
Yu mŭlk laa
Naan tai yaa lai.

The men march into camp looking very grave and sit down at the corrobboree ground (*iltharra*). Water is then brought to them in a wooden vessel by the aged Panunga warrior, who invites them to drink. This they do with great readiness, and food is then brought by the same warrior. As soon as it is quite dark the *quaapara* (corrobboree) fires are lighted and the performance kept up until daylight, the Pultarra and Panunga only dancing and singing. A plentiful supply of the succulent grub is now assured.

(*b*) Rain-making Ceremony.

The privilege of making rain is confined to the men of the Kumarra and Purula castes, who also perform a ceremony which is supposed to increase the supply of *erriakura*.* These two ceremonies can only be performed at certain places, far apart, at which from time immemorial they have taken place. A spirit of the Alchŭrringa (long ago) named Irtchwoanga imparted the secret of rain-making to the Kumarra and Purula, and fixed upon the spots where the ceremony was to take place. Women are not permitted to attend, and men of the Pultarra and Panunga classes, though they are permitted to be present, are debarred from taking the part of the principal performers. The Kumarra and Purula affect reticence in speaking of the rain-making ceremony in presence of the two other classes.

At sundown (*alknŭrrika*) all those who are going to play a part march into camp fully painted, and with the crown and each side of the head decorated with bunches of feathers. At a signal from the Alartŭnja (chief) all sit down in a line, the arms folded across the breast, and sing for some time—Ŭlgaranti alkwarai lathrik alkwaranti ŭlgaraa-a (repeated).

Suddenly all jump up and leave the camp in silence. Marching in single file, they halt some miles away and, at daylight, scatter out in search of game, which

* The tunicated tubers of *Cyperus rotundus*.

they cook and eat, but no water is drunk. Having breakfasted, they again paint themselves; broad white bands of down (*undatta*)* adorn the belly, arms, legs and forehead; red and white ochre are also used. When their toilette is completed, they return, marching in silence and in Indian file, to a spot not far distant from the main camp, where a special wurley (*nalyilta*) has been constructed to receive them; this once entered, no man must leave on any pretext until the ceremony is over. Gum leaves (Eucalyptus) (*pilpirpa*) are carefully strewn over the floor by old men of the Kumarra and Purula, who have remained in camp for the purpose. The party arrives at the *nalyilta* about sundown, the young men entering first and taking up a position at the back of the wurley, where they lie face downwards.

Meanwhile the rain-maker—Chantchwa—is being prepared by the older men; his face and head are entirely covered with hair-girdles (*ilippa*); by means of blood drawn from the glans penis, patches of bird's-down are made to adhere to the hair and to the whole body, so that the man thus disguised presents a never-to-be-forgotten spectacle. When fully dressed he takes up a position close to the mouth of the *nalyilta*, from which extends a shallow trench (*kŭllarumpa*) twenty or thirty yards long, and the older men, who sit around him, now begin and continue singing for some time:—

Illunga ilártwina unálla
Illunga kau-wŭ lŭngalla
Partinyi yert artnuri elt artnuri
Yerra alt nartnura alla
Partinya yarraa alt nartnurai
Yerra alla partinya atnartnurai
Yokaa wau wai.

This finished, the Chantchwa emerges from the *naylilta* and proceeds slowly twice up and down the trench while his legs and body are made to quiver in a most extraordinary manner—every nerve and fibre appears to be agitated. The young men now, for the first time, arise from their recumbent position and join the older men, singing—

Pŭrlaaráu kŭrlaa
Rŭmpaa arri
Ŭmpaakúnla carlá
Rŭmpaa arrié
Paakŭr tai

* Probably of the Eagle-hawk (*Aquila audax*).

while the Chantchwa's movements appear to accord with the singing. When he re-enters the *nalyilta*, the young men all prostrate themselves again, and this position they always occupy when the Chantchwa is present. More singing follows in which the rain-maker joins; at intervals during the night he goes up and down the trench and quivers as described. The singing continues all night and at day-break the Chantchwa executes a final quiver, lasting for longer than usual, in which he fairly exhausts himself. On his then declaring the ceremony at an end the young men rush out screaming in imitation of the spur-winged plover (*Lobivanellus lobatus*). The cry is heard in the main camp and taken up, with weird effect, by the men and women there. An old woman of the Kumarra or Purula class has covered a large space with gum leaves just within sight of the camp, and after the Chantchwa has been relieved of his head-dress he and his assistants march to the spot. There they lie down on the leaves for a short time and then proceed to the camp, where food and water awaits them. Sometimes the whole performance lasts for forty-eight hours, during which period the men must fast.

After this ceremony a rain-dance takes place, in which all the men join, the women, as usual in corrobborees, providing a musical accompaniment.

The Al-lail-linga groups of the Arunta-Ilpma subdivision of the Arunta tribe are great rain makers. They inhabit the eastern portion of the Arunta-Ilpma country or that around Paddy's Hole, about fifty miles eastward of Alice Springs. This is known as the rain country, "Kwatcha Kartwia."

Sacred Stones.—Churiña.*

The sacred stones (*churiña*) of the tribe are flat stones of various sizes of soft material such as micaceous rock, and generally engraved in various ways, the predominating characters being concentric circles. These stones are greatly valued by the natives, and it is difficult to procure specimens. They are handed down from generation to generation, and the women are never allowed to see them. When not in use they are hidden away in secret spots known only to the chief men of the tribe to which no woman, under penalty of death, is allowed access. Each *churiña* is believed to possess wonderful charms—it strengthens the man who is armed with it, and it possesses the virtue of making its possessor invisible to any enemy. As has been stated the *Kurdaitcha* is armed with one of these magic stones which he carries hidden in his arm-pit. In battle they are carried by the chief and older men. The humming-stick (*irula*) also belongs to the *churiña*

* See also notes by Mr. Gillen on Certain Churiña described at p. 81.

class, but it is only used in the ceremonies of circumcision and subincision. The marks on the *irula* are evidently copied from the marks on the stone *churiña*. Certain *churiña* are the property of particular subdivisions of the tribe and are intimately associated with various sacred ceremonies such as the two above-described, which are only performed by members of such subdivisions, the latter being evidently connected with the idea of a totem and the Churiña may be described as symbolic of the latter.

Restrictions as to Food.

Girls and young women are not permitted to eat of the flesh of the porcupine (*Echidna aculeata*) (*imaarlinga*), perenti (*Varanus giganteus*) (*echunpa*), wild turkey (*Eupodotes australis*) (*ertūa*), or eagle-hawk (*Aquila audax*) (*iritcha*) until it becomes certain that their breasts are fully developed. It may happen however that a woman reaches the age of 40 before partaking of the forbidden meats. Should any young woman transgress this law it is believed that the development of her breasts will become permanently checked; many instances were quoted to me in which the natural development had been thus checked by breach of this law, and one woman, when asked by me why her breasts were so small, explained sorrowfully that she had eaten *ertūa* when a little girl. In addition to checking the growth of the breasts it is believed that eating the flesh of the eagle-hawk produces great leanness.

Boys up to the age of manhood are only allowed to eat of the leg of the eagle-hawk, which is supposed to impart strength and improve the growth of the limbs. They are struck or patted on the calf of the leg with the leg of the same bird, and it is believed that strength is thereby imparted.

Making of Medicine-Men.

The medicine-men of this tribe known as *Railtchawa* or *Nangera* are doubtless men of considerable imaginative powers, and their influence over their patients is very often remarkable. Questioned as to how they acquire their art they furnished me with the following information:

On a man becoming imbued with the idea that he has in him the makings of a *Railtchawa* he visits alone a cave in the Emily Plain (about fourteen miles to the south of the Alice Springs telegraph station), which is inhabited by a spirit called *Iruntŭrriña;* he sleeps near its mouth for a night but does not venture inside. At daylight next morning the *Iruntŭrriña* appears at the mouth of the cave and

throws at the prospective *Railtchawa* an invisible lance called *atnóngara*, which pierces the neck from behind, penetrates the tongue making a large wound, and escapes by the mouth. The tongue remains perforated in the centre with a hole large enough to admit the little finger—and this hole is the only permanent effect of the *Iruntŭrriña's* treatment. Another *atnóngara* pierces the head from ear to ear. The novice drops down dead, and is at once taken into the depths of the cave which is supposed to extend under the plain and to terminate beneath the Edith Range, about ten miles distant. In this the *Iruntŭrriña* has his abode amidst running streams and perpetual sunshine. It is called *okálpara** and no native would dare to enter it. Tradition states that in the long, long ago two men entered innocently in search of water and were never more heard of. When the body is taken into the *okálpara* the *Iruntŭrriña* removes, with the aid of his invisible *atnongara*, the viscera of the dead man and furnishes him with a completely new set of internal organs "manufactured on the premises." Thus equipped he is taken outside the *okálpara*, where, after a little time, he comes to life again, but in a condition of insanity. The *Iruntŭrriña* watches for the awakening and as soon as the patient is fit to walk he is taken back to his tribe by the spirit, who, however, is invisible to the tribesmen. The spirit at once returns to his abode and the patient remains mad for some days until one morning it is noticed that he has painted, with powdered charcoal and fat, a broad, black band across the bridge of his nose. All signs of insanity have disappeared, and the tribesmen at once recognise that a new *Railtchawa* has graduated. Etiquette prevents the new medicine-man from practising his profession for about twelve months, and in the meantime he dwells upon his awful experiences, and cultivates the acquaintance of the other members of his profession of which there are generally one or two in each tribe or clan. The *Railtchawa* must abstain from eating fat altogether, otherwise he loses his power. All *Railtchawas* are not gifted alike, some have great reputations while others are looked upon as much inferior.

Blood as a Therapeutic Agent.

A man suffering from continued weakness is sometimes supplied with fresh blood (*irkna*) drawn from the veins of the arm of one of his robuster brethren. The vein is opened with a stone knife, and the blood, received into a vessel, is drunk by the patient before it cools thoroughly. This practice, known as *ilka-*

* This cave has been explored by white men, who found it to consist of a series of limestone caverns and to be thickly populated with bats (*Megaderma gigas*). I visited it in company with Mr. Gillen, and we found that it had become almost completely silted up as the result of very heavy floods.—(E.C.S.)

turka, is said to have a wonderful effect in cases of debility. The lubras, from whom it is carefully concealed, have no knowledge of the custom, the men stating that no woman must know that a man has partaken of the blood of a man. The men further believe that a draught of woman's blood would kill the strongest man.

In some cases of severe illness, a patient (male) is anointed all over with blood obtained by puncturing the labia minora. Men, however, have a very great objection to this form of treatment, and will always try to avoid it if strong enough, and it is only practised when the patient becomes very weak and the *Kailtchawa* has failed to effect an improvement. The patient, who is to be thus treated, is seized and held by several women while she, whose blood is being used, rubs it in. When the whole body has been thus well rubbed a coating of grease is added, which is believed to assist the process of absorption. A woman may be similarly anointed by blood taken from the male urethra.

Men may drink the blood of freshly killed animals, but no woman is permitted to do so during the menstrual period (*al-lura*). It is believed that the breaking of this rule would abnormally increase the usual discharge and probably cause the woman to bleed to death. Women who have reached the climacteric are allowed the same privilege as the men in this respect.

Customs of War.

When warriors are starting out to attack another tribe they decorate their faces and bodies with stripes of yellow ochre, and a bunch of emu feathers (*taara*) is fastened to the hair girdle at the waist. This girdle is called *kirra-urkna* and is made of hair taken from the head and beard of a dead warrior relative. This kind of girdle is never worn except in warlike expeditions when the tribe means fighting; it is supposed to impart great strength, courage, and accuracy of aim to the wearer, in fact all the warlike attributes of the dead man are supposed to be, by this means, added to the natural powers of the wearer, while it also produces such inaccuracy of aim in the enemy that it is considered almost impossible to kill a man so protected. All these advantages are expressed by the one native work *inkilya*. When going into battle the young warriors, protected by the *kirra-urkna*, always take the lead, the old men follow in the rear and operations are directed by the Alartŭnja (chief) of the tribe or sub-division of the tribe.

Warriors returning from an expedition, after killing one or more of the enemy, paint their bodies with charcoal and decorate the head with green bushes; a bunch

of green leaves is also inserted in the armlets (*kulchia*) close to the armpits (*lunpa*). Green twigs in leaf are put through the hole in the septum of the nose.

A defeated tribe, having lost one or more of its number, returns to camp in silence with their bodies smeared with white earth.

Beliefs and Superstitions.

The natives do not believe in a Devil or Evil Spirit. The *Kurdaitcha*, whom they sometimes speak of as "Devil-devil," and of whom they have an awful dread, is merely a man intent on murder, who temporarily disfigures his face and disguises himself generally by dressing his beard and his hair in fantastic shapes. He wears shoes (*interliña*) the soles of which are skilfully made of interwoven emu feathers, stuck together with human blood, the uppers being of knitted human hair. These shoes, oval in shape, leave no track,* and the movements of the man so equipped cannot be heard. He is invariably provided with a magic stone (*churiña*), which he carries in his arm-pit.

Ulthaana.

The sky is said to be inhabited by three persons—a gigantic man with an immense foot shaped like that of the emu, a woman, and a child who never developes beyond childhood. The man is called *Ulthaana*, meaning spirit. When a native dies, his spirit is said to ascend to the home of the great *Ulthaana*, where it remains for a short time; the *Ulthaana* then throws it into the Salt-water (sea) [these natives have no personal knowledge of the sea], from which it is rescued by two benevolent but lesser *Ulthaana*, who perpetually reside on the seashore, apparently merely for the purpose of rescuing spirits who have been subject to the inhospitable treatment of the great *Ulthaana* of the heavens (*alkirra*). Henceforth the rescued spirit of the dead man lives with the lesser *Ulthaana*.

The natives have no idea of punishment or reward hereafter, nor do they believe in natural death except in old age.

Witchcraft.

Except, as just stated, in cases of old age the natives do not believe in natural death and they ridicule the idea of a young man or woman dying from natural causes. They believe that death is brought about by the pointing of a specially

* *Vide* Mr. Byrne's account in preceding paper.

prepared bone (*injilla*), or piece of wood (*irna*) pointed at both ends and upon which certain signs are carved. The villain, who wishes to encompass the death of an individual, prepares the *injilla* or *irna*—both are equally effective—with the aid of a resinous compound he fastens a piece of hair string to one end of the *injilla*, he then goes alone into the bush to some unfrequented spot at a distance from the camp, being very careful not to be seen. When he has chosen a spot for his incantations and assured himself that there is no one in the locality, he places the *injilla* on the ground and assuming a crouching position, hisses out the following curses:—

"I-tar pŭkaluna pŭr-tulinja áppinia-a,"
("May your heart be rent asunder").
"Pŭrtulinja appinaa intaarpa inkirilya quin-appani intarpákalaa-a,"
("May your backbone be split open and your ribs torn asunder").
"Ŏkincha quin appani ilchi ilchaa-a,"
("May your head and throat be split open").

The incantation finished, the man returns to camp, leaving the *injilla* for three or four days when he removes it to within a short distance of the camp. There he carefully conceals it until night; during the early part of the evening when the natives are chatting round the camp fires, he steals out into the darkness, procures the *injilla* and stealthily approaches the camp until his victim's features are clearly discernible by the firelight (the villain of course remains unseen); he now stoops down, keeping his back towards the victim, and jerks the *injilla* towards him several times while muttering curses in subdued tones. He again conceals the *injilla* and returns to camp—the victim being supposed to sicken and die within a month unless he be saved by the skill of the medicine-man (*Railtchawa*). When the charm takes effect and the victim becomes ill the villain takes the *injilla* away secretly and burns off the hair-string while expressing a wish that the destruction of the victim's life may be as effectual as the destruction of the string. Any native discovered in the act of using the *injilla* would be immediately put to death.

Traditions of Origin of the Race.

Ages ago ancestors of the present race lived in the form of a great species of porcupine (*Echnida aculeata*) called *Inapwerla*, which had no limbs or organs of sight, smell, or hearing, and which did not eat food. This animal, incapable of motion, presented the appearance of a man whose legs and arms were so shrunken and "doubled up" that mere indications of limbs were visible. A spirit man called

Alkappera came from the east (*iknŭrra*) who, seeing these strange creatures, felt a great pity for them and, on examination, discovered that, with the aid of his magic knife, he could, by releasing from the curious mass of flesh the faintly outlined legs and arms, give these creatures the same shape as himself. Taking up one of the *Inapwerla* he quickly released the arms, adding fingers by making four clefts at the end of the arm; the legs were then released and toes added in like manner. The figure could now stand erect, the nose was formed and the nostrils bored with the finger; one stroke of the knife added the mouth, which was pulled open several times to make it flexible; eyes were formed by the simple process of incision and another stroke or two of the magic knife provided the new being with genital organs. The *Alkappera* continued his operations until all the *Inapwerla* were converted into living images of himself. In this way both sexes were created with equal rapidity. Having finished his task the spirit called all the men and women together, endowed them with the gift of speech, and informed the men that the women were made for their use, with a view of increasing their numbers. It was ordained that the men, before taking wives, must undergo the ordeals of circumcision and subincision, and that they must hide from the women during recovery; these operations being performed on them at once. The men and women assembled were then divided into four classes, Pultarra, Kumarra, Panunga and Purula, and were instructed in the marriage laws, which are observed at the present time.

Tradition of the Origin of Fire.

Fire (*ura*) is produced by the friction of hard against soft wood. A hard-wood stick is pointed at one end and inserted in a small hole bored in a piece of softer material, generally of a root. The pointed stick is then rotated quickly between the hands until the friction produces fire.*

The natives explain that their ancestors in the distant past (*ŭlchŭrringa*), which really means in the dream-times, for this is the manner in which the natives always speak of the long ago, acquired the art of "*ŭrpmalla*" (fire-making) from a gigantic arrunga (*Macropus robustus*) called *Algurawartna*. This monster was, according to native tradition, endowed with the gift of speech, and, while making fire, always chanted—

* It will be observed in my own notes that the soft-wooded shields of Erythrina wood, collected on the Expedition, which bore evidence of having been used for the production of fire by the ploughing method, *i.e.*, by driving the point of the hard-wooded stick backwards and forwards along a groove. Mr. Gillen informs me that both methods are practised.—(E.C.S.).

"Up malaara kéytie
Alkna munga
Il pau witá witá."

This chant has been handed down from time immemorial, and is used at the present time. The Algurawartna was subsequently killed and eaten by the natives, and his fat lasted the tribe for many moons.

Knocking Out of Teeth.

Men and women of the Al-lail-linga groups of this subdivision of the Arunta tribe, who have been referred to as great rain makers, knock out the right upper central incisor, but there is no special ceremony attached to the knocking out of the tooth.

Head-rings.—Perforation of the Septum of the Nose.

The women wear head-rings made of fur, similar rings are worn round the neck. The wing bone (*ulalkirra*) of an eagle-hawk (*iritcha*) is worn through the septum of the nose.

Cowardice.

The natives, although having a contempt for physical cowardice in one of their own tribe, have no equivalent for the English word coward. They merely speak of a coward as "*itririma*," that is to say, one who is frightened.

Water-bags (Arrancha).

These are made with the skins of kangaroo, euro and wallaby.

Explanation of Plates.

Of the plates which follow, Nos. IX. to XIX. inclusive are reproductions from photographs taken by Professor Spencer and Mr. Gillen, as indicated in each case.

PLATE I.

Fig. 1. Left tibia of skeleton from Alice Springs, showing slight degree of Camptocnemia. Length $17\frac{1}{8}$ inches. Platycnemic Index 73·7.

Fig. 2. Sections of the same tibia, the left being that taken at the junction of the upper and middle thirds and the right at the mid-point of the bone.

Fig. 3. Corresponding sections of normal European Tibia. Length $14\frac{1}{4}$ inches.

Fig. 4. Corresponding sections of Platycnemic Tibia of an Australian aboriginal from the South-east of South Australia. Length $15\frac{3}{4}$ inches. Platycnemic Index 69·4.

Fig. 5. Corresponding sections of Platycnemic Tibia of an Australian aboriginal from the same locality as the preceding. Length $14\frac{1}{8}$ inches. Platycnemic Index 57·9. In each case *ex* and *in* indicate the anatomical external and internal borders. For further particulars on Platycnemia and Camptocnemia *vide* pp. 19–22 of text. The Platycnemic Indices are derived from measurements taken at the level of the nutrient foramen, so as to be comparable with those of other observers by the formula *trans. diameter* $\times$ *100* = Platycnemic Index ant. post. diameter; but in view of the variation of the nutrient foramen, I can see no reason why the mid-point should not be that selected.

PLATE I., *bis.*

Antiarra Rock.

Owing to the artistic imperfections of the writer, the photographer of the party being unfortunately otherwise engaged at the time of his visit, this sketch must be considered as designed to show the details of the Rock itself and of its relation to the escarpment at the base of which it stands. The vertical red and white stripes, though no doubt originally covering the whole of the front face as shown in the plate, were at the time of my visit only conspicuous upon the lower half. For details *vide* p. 67 of text.

PLATE II.

Native Rock Drawings.

Figs. 1, 2, 3, 6, 7, 8, 9. From the face of a quartzite rock near Ooraminna Water-hole, McDonnell Range. Their significance is by no means clear. Perhaps Fig. 7 may represent a pentadactyle track, though possibly it may be a ruder and simpler form of Figs. 3 and 5, which are most likely figures of the small fan-like tassel worn by the men as a pubic appendage, *vide* Plate VI., Fig. 8. In Fig. 6 and, to some extent, in Fig. 9 we have concentric patterns, which are of very frequent occurrence among native drawings, possibly representing body patterns, though the close association on the rock of Fig. 6 with Fig. 1 suggests that perhaps these two together may represent some topographical features, such as a track or water-course and its relation to camps or water-holes. For the meaning of Fig. 8 I can offer no suggestion. Besides the above drawings there were on this rock several stencilled imprints of hands done in red ochre and charcoal.

Fig. 4. Ayers Rock. Represents the leaf of the Cycad *Encephalartos Macdonnelli*, as does also Fig. 12 in a ruder fashion. I may add that no Cycad is known to exist within at least eighty miles of Ayers Rock.

Fig. 5. Ayers Rock. A stone knife, with its haft of resin.

Figs. 10, 11. Ayers Rock. Meaning unknown, nor could any of the blacks consulted suggest an interpretation.

Fig. 13. Tarn of Auber, Glen Edith. Snake drawn as if emerging from a natural hole in the rock.

PLATE III.

Native Rock Drawings.

Figs. 1, 2. Ayers Rock. The latter is certainly and the former probably intended to represent a lizard, but I am unable to explain the meaning of the radiating lines from the head end of the drawings.

Fig. 3. Between Reedy Creek and Bagot Creek. The track of a lizard.

Figs. 4, 5. Ayers Rock. Probably Eggs.

Fig. 6. Ayers Rock. Of unknown significance.

Figs. 7, 9. Ayers Rock. Snakes.

Fig. 8. Ayers Rock. Bird.

Fig. 10. Ayers Rock. Stated by the blacks to be a Dingo.

Fig. 11. Ayers Rock. Human Heads; the only attempt seen to delineate any part of the human body.

Figs. 12, 13, 14. Ayers Rock. Significance unknown to the blacks who were questioned. Fig. 12 might conceivably be meant for a looping caterpillar, and Fig. 13 suggests to the medical mind a *fœtus in utero* or possibly a marsupial embryo in the pouch, though I can scarcely believe this view to be credible.

PLATE IV.

Native Rock Drawings.

Fig. 1. Rock-shelter at Reedy Creek, Gill Range. Emu sitting on eggs as if seen from below or from above through a transparent body.

Fig 2. Emu tracks, these were on the rock-face immediately below Fig. 1.

Fig. 3. Rock-shelter between Reedy Creek and Bagot Creek, Gill Range. A Lizard.

Fig. 4. Ayers Rock. A snake.

Fig. 5. From the same rock-shelter as Figs. 1 and 2. This rather elaborate figure was stated by the blacks to be a decoration pattern.

PLATE IV.—(*Continued*).

Fig. 6. Between Reedy Creek and Bagot Creek.

Fig. 7. From the same rock-shelter as Fig. 3. Without doubt a decoration pattern, for a figure of this shape appears on the breast of a native in a photograph sent me by Mr. Gillen.

Fig. 8. Reedy Creek.

Figs. 9, 11. Between Bagot Creek and Reedy Creek.

Fig. 10. South side of Levi Range. These are probably all decoration patterns. For the last figure I am indebted to Mr. Watt.

Figs. 12, 13. Ayers Rock; significance unknown.

Fig. 14. Reedy Creek. Possibly a decoration pattern.

Fig. 15. Between Reedy Creek and Bagot Creek; significance unknown.

PLATE V.

WEAPONS, &c. ARUNTA TRIBE.

Fig. 1 - - - Barbed spear. × $\frac{1}{10}$.

Figs. 1*a*, 1*b* - - The same, showing method of attachment of barb and tail-piece. × $\frac{1}{2}$.

Fig. 2 - - - Lance of Desert Oak. × $\frac{1}{10}$.

Fig. 2*a* - - - The same, blade and tail end. × $\frac{1}{2}$.

Fig. 3 - - - Playing stick. × $\frac{1}{11}$

Fig. 3*a* - - - The same on larger scale. × $\frac{1}{3}$

Figs. 4, 5, 6, 7, 8 Series of missile weapons showing evolution of the boomerang form from the straight throwing stick. × $\frac{1}{7}$

Figs. 10, 10*a*, 10*b* Spear-thrower. × $\frac{1}{7}$. Method of attachment of recurved point. × $\frac{1}{3}$

Fig. 10*c* - - - Method of fixation of stone chip to end of haft by means of Triodia resin. × $\frac{1}{3}$

Fig. 11 - - - Back surface of shield, showing haft. × $\frac{1}{8}$.

Fig. 11*a* - - - Front surface of same, showing fire-making grooves at the upper end. The cross-shaped mark at the lower end is a patch of Triodia resin stuck on for some unknown reason. × $\frac{1}{8}$.

PLATE VI.

DOMESTIC IMPLEMENTS, UTENSILS, AND ORNAMENTS.

Fig. 1. Quartzite knife in sheath of "paper bark." × $\frac{1}{2}$.

Fig. 1*a*. The same, removed from its sheath. × $\frac{1}{2}$.

Fig. 2. Hardwood food and water vessel. × $\frac{1}{4}$.

Fig. 3. Softwood food and water vessel. × $\frac{1}{4}$.

Fig. 4. "Hold-all." × $\frac{1}{2}$.

Fig. 5. Chignon. × $\frac{1}{3}$.

Fig. 5*a*. Bone hairpin for chignon. × 1.

Figs. 6, 7. Bone ornaments for nose. × $\frac{1}{2}$.

Fig. 8. Pubic tassel worn by males. × $\frac{1}{2}$.

Fig. 9. Wooden head ornament. × $\frac{1}{2}$.

Fig. 10. Native spindle. In this case the string is made of human hair. × $\frac{1}{3}$.

Figs. 11, 11*a*. Musical concussion sticks. × $\frac{1}{3}$.

Fig. 12. Adze. × $\frac{1}{5}$.

Fig. 13. Stone chip found in "hold-all" (Fig. 4). × $\frac{1}{2}$.

PLATE VII.

CEREMONIAL STICKS AND STONES (CHURIÑA) FOUND AT KUNDŬNGA (*see description in text*).

Fig. 1. Made of wood; assigned to the Snake Ceremonial. × $\frac{1}{5}$.

Figs. 2, 3. Made of wood; assigned to the Opossum Ceremonial. × $\frac{1}{5}$.

Fig. 3*b*. An attempt to show in greater magnification the character of the incised markings. × $\frac{1}{2}$.

Fig. 4. Made of wood; assigned to the Sugar-ant Ceremonial. × $\frac{1}{5}$.

Fig. 5. Made of wood; assigned to the Opossum Ceremonial. × $\frac{1}{5}$.

Figs. 6, 7. Made of micaceous stone; Ceremonial connection unknown. × $\frac{1}{5}$.

Fig. 8. Made of micaceous stone; assigned to the Euro Ceremonial. × $\frac{1}{5}$.

Fig. 9. Small wooden Churiña (Irula) used as a "bull-roarer." × 1.

PLATE VIII.

Ceremonial and Corrobboree Head Dresses, Arunta Tribe.

In all the figures of this plate the helmet is constructed after the manner described in the section relating to this subject.

Fig. 1. Performer in the Rain Dance, Charlotte Waters. The long, erect and ornamented structure is of wood and belongs to the class of objects described as *churiña*. The pattern on it is, like those on the face, helmet and body, made with Portulaca down (red and white) caused to adhere with blood. The plume at the summit is of emu feathers. The figure shows also a nose-bone *in situ* and the end of the beard tied up in a bunch and also a part of the body pattern.

Fig. 2. Itaa-perukna Corrobboree, Alice Springs. The small plumes which surmount the helmet are of emu feathers. This and the following figure show a very common device, in which a band of colour or ornamental material crosses the bridge of the nose and cheeks.

Fig. 3. Ill-a-yon-pa Corrobboree, Alice Springs.

Fig. 4. Alp-ma-rókita Corrobboree, Alice Springs. The semicircular appendage to the helmet is made of a bundle of grass stems, closely bound round with whitened native string. A similarly-shaped appendage is sometimes made of two pieces of bent stick bent into the form of a quadrant; these are so inserted into the helmet frame as to form together a semicircle. Such a semicircle is often ornamented with alternate stripes of red and white Portulaca down. Two such semicircles may be made to cross one another at right angles. In the figure the pendants to the crescent are Peragale tail-tips, and emu plumes are worn in the armlets.

Fig. 5. Itaa-perukna Corrobboree, Alice Springs. The plumes are of the under feathers of the emu.

In Figs. 2, 3 and 5 body-scars are visible.

PLATE IX.

Fig. 1. Arunta Tribe, Alice Springs. Performers in the Ill-a-yon-pa Corrobboree.

Fig. 2. Arunta Tribe, Alice Springs. Performers in the Atnimókita Corrobboree.

These figures show various forms of corrobboree head-dresses and facial and body patterns made as described in the text. The pattern, shown in the taller man of Fig. 1, which extends from the trunk down the front of the thighs, is a common device, and the pubic tassel of the same figure is made of the tail-tips of the rabbit-bandicoot (*Peragale lagotis*). All the figures show some scarring of the body.

PLATE X.

Fig. 3. Adult male, Luritcha Tribe, Tempe Downs, shows Chignon bound on with fur-string (*vide* Pate VI., Fig. 5) and broad whitened frontal band.

Fig. 4. Adult male, Arunta Tribe, McDonnell Ranges. Shows the hair matted into thick coils with red ochre and grease, and bone nose ornament.

Fig. 5. A Chief, Arunta Tribe, McDonnell Ranges. Shows manner of wearing feather plumes in the hair.

Fig. 6. Adult male, Arunta Tribe, Strangways Range. Feather plume worn in armlet; multiple neck rings.

All the heads on this plate show the high shaven forehead.

PLATE XI.

Fig. 7. Rather old female, Arunta tribe, Charlotte Waters. Hair matted into coils with white earth in sign of mourning. The chest also is usually plastered with the same material.

Fig. 8. Type of young adult female, Arunta Tribe, Alice Springs, showing method of wearing the hair. This figure also shows the short scar-marks between the breasts, as well as others between the collar-bone and armpit and over the deltoid.

Fig. 9. Full length figure of the preceding. She is wearing a fur apron such as is described in the text and mentioned as not frequently seen amongst the Arunta women.

Fig. 10. Well-developed figure of adult male, Arunta Tribe, Strangways Range.

PLATE XII.

Fig. 11. Arunta Tribe, McDonnell Ranges. Warriors on the march; mid-day camp. The boomerangs, stuck into the ground in a row, have their ends decorated with transverse bars of red ochre and white earth. Those natives that are not recumbent are sitting, not squatting. The flat expanse immediately behind the group is the sandy bed of a creek.

Fig. 12. The young girl with "boomerang legs," described in text under Section Platycnemia and Camptocnemia.

Fig. 13. Arunta Tribe, Crown Point. This unpleasing countenance shows the effects of disease, presumed to be syphilis, as manifested by the node on the forehead as well as osteitic changes in the breast-bone and, probably, within the nose.

PLATE XIII.

Fig. 14. Band of natives on the march, armed with spears, boomerangs and shields, met near Henbury.

Fig. 15. Food and water utensil (Pitchi) used as cradle.

Fig. 16. Group of natives performing an impromptu corrobboree at Crown Point. The group is a little out of centre and the legs are obscured by the dust raised, but the plate gives some idea of the vigour and character of the movements of the performers.

PLATE XIV.

Fig. 17. Corrobboree at Tempe Downs, Luritcha Tribe. In the foreground is the chorus of seated old men, women and children, who are singing and beating time. The performers, who are dancing on a ground specially cleared, wear the usual head-dresses and body-patterns and have bunches of gum leaves attached to their ankles. The scraggy-looking trees in the near back-ground are *Eucalyptus sp.* Observe the figure of the child standing to the left of the seated group.

PLATE XV.

Fig. 18. Preparation for the Atnimókita Corrobboree, Alice Springs. Venesection; the operator is manipulating the arm to promote the flow of blood, which is being received into the hollow of a shield.

Fig. 19. Alp-ma-rókita Corrobboree, Alice Springs. A performer seated in the fork of a decorated pole. A very similar pole was used in the Atnimókita Corrobboree, the only difference being that in the latter both forks are of equal length, whereas in the former one is longer than the other.

Fig, 20. Group preparing for the Alp-ma-rókita Corrobboree, showing various styles of head-dresses and body-patterns. A part of the base of the chief pole is seen on the left margin of the Plate, and there is another at a little distance. Between the two members of the group who are most to the left is a food vessel containing red and white Portulaca down, with a hand-stone used for grinding the ochre.

PLATE XVI.

Figs. 21 of this Plate to Fig. 28 of Plate XIX. form a series of representations of various phases of the initiatory rites of circumcision and subincision, of which the full description will be found in Mr. Gillen's paper.

Fig. 21. Operating ground with two rows of spears decorated with gum leaves.

Fig. 22. Boy to be circumcised (with back turned towards the observer) seated with group at one end of the rows of spears.

Fig. 23. The "Unthippa" dance, in which the lubras strip the leaves from the spears.

PLATE XVII.

Fig. 24. In this place should have appeared a plate properly belonging to this series which represents the act of circumcision as it is performed amongst the Arunta tribe or, at least, among the Arunta Ilpma section. By an error, however, the Plate, representing a group of Luritchas posed for this operation at Tempe Downs and described in the text, has been substituted for the proper member of the

PLATE XVII.—(*Continued*).

Arunta series. In the missing Plate the subject, in a recumbent position, is represented as being held up by the arms of men who either squat beneath or stand beside him. The operator is about to make the incision with a stone knife hafted with Triodia resin.

Amid the intricacies of the group it is somewhat difficult to identify the subject. Those are his legs which, from thigh downwards, are presented towards the observer. The rest of his body is concealed behind the topmost figure of the group, who is seated astride of his recumbent body.

Fig. 25. Nartŭnja pole. Relatives of the boy, who is about to undergo subincision, awaiting his arrival. The right-hand seated figure is the boy's father, who wears a special decorative pattern. Observe the ceremonial sticks (*Erula*) suspended from the pole, and the bunch of plumes on the top.

PLATE XVIII.

Fig. 26. The operation of subincision at the foot of the Nartŭnja pole.

Fig. 27. Two youths, Arunta Tribe, Alice Springs, who, having undergone and recovered from the operation of subincision, have now attained perfect manhood. In token thereof they have their hair tied up, wear hair-girdles and carry the spear and shield.

PLATE XIX.

Fig. 28. Recently subincised boy (Bonds Springs) camped, apart from his tribe, with guardian attendant, who is grinding *mŭnyeru*. The camp is in the sandy bed of a creek.

Fig. 29. Arunta Tribe, Alice Springs. Performers in the Chilperta (wild-cat) ceremony. The material used for the head and body decoration is the down of the Eagle-hawk (*Aquila audax*), which is made to adhere with blood. Each carries in his hand a bunch of twigs (*Hakea* or *Grevillea sp.*).

ALPHABETICAL INDEX TO PART IV.—ANTHROPOLOGY.

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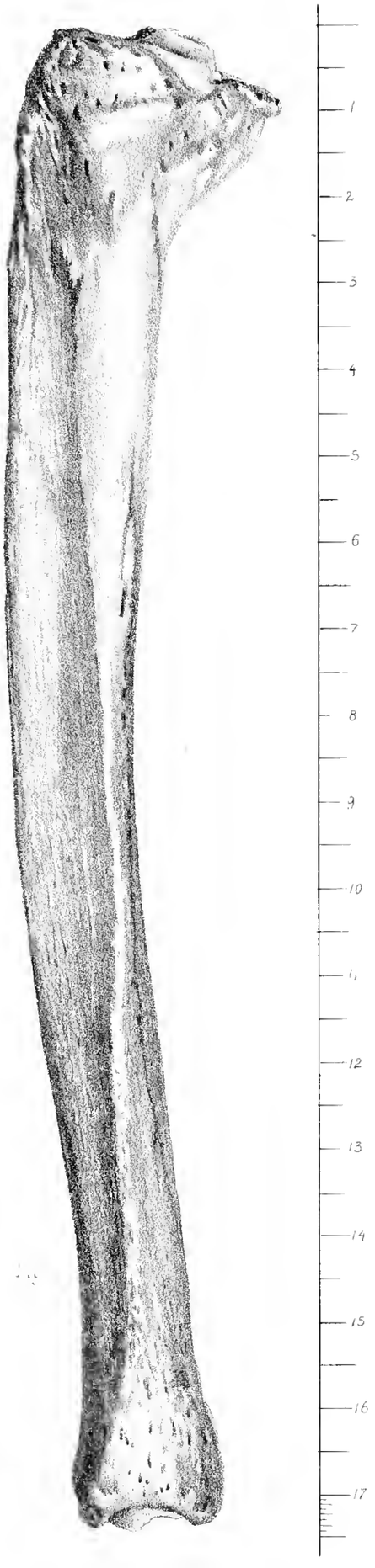

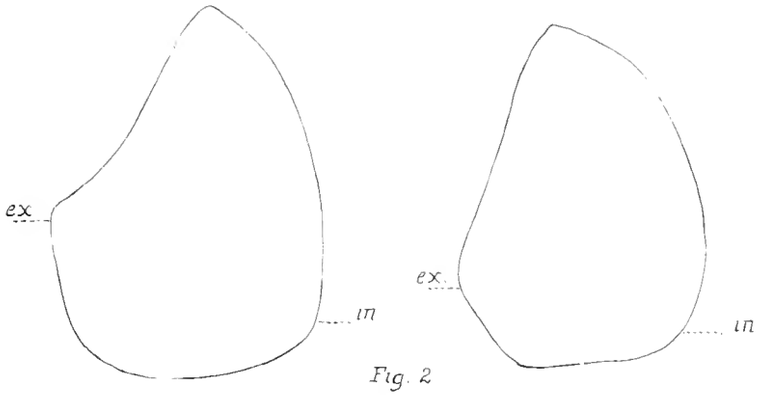

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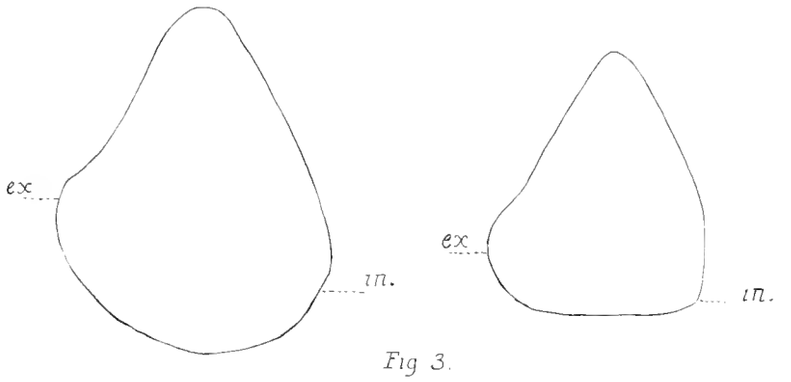

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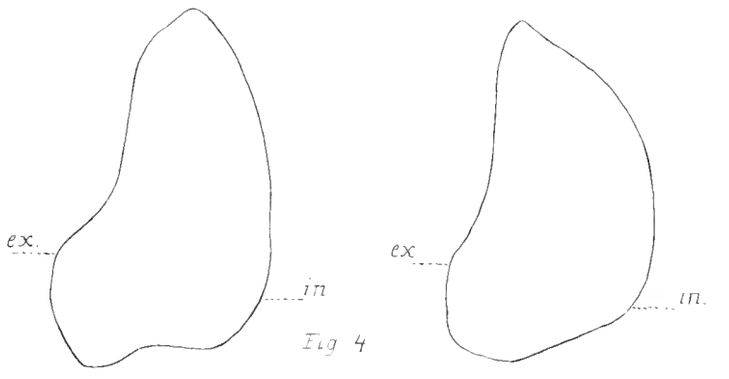

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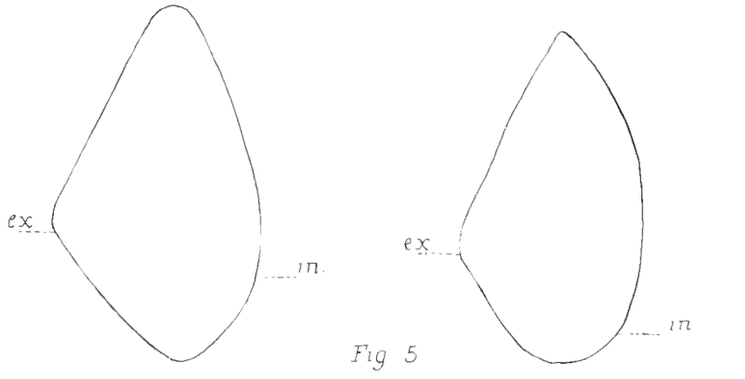

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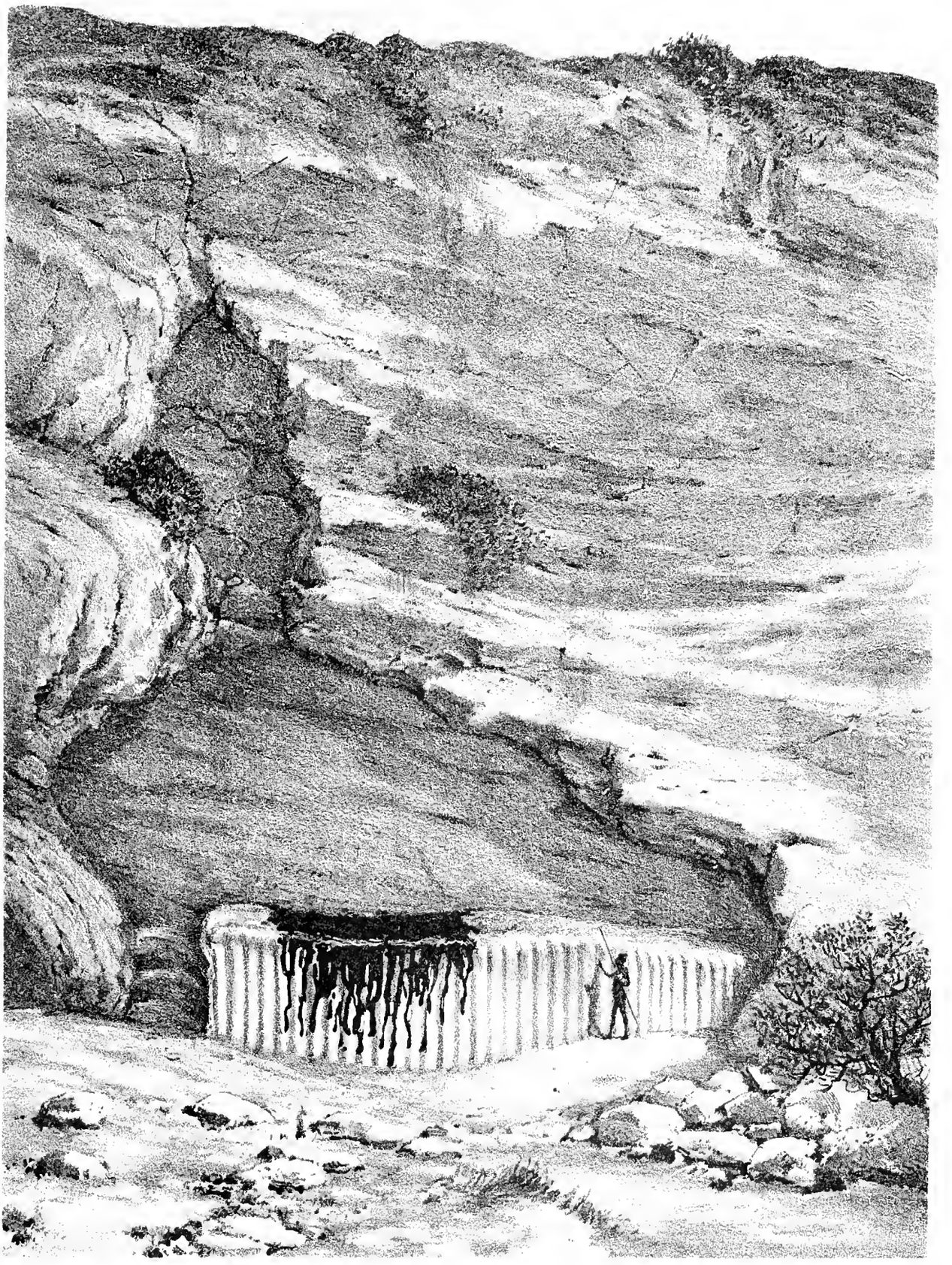

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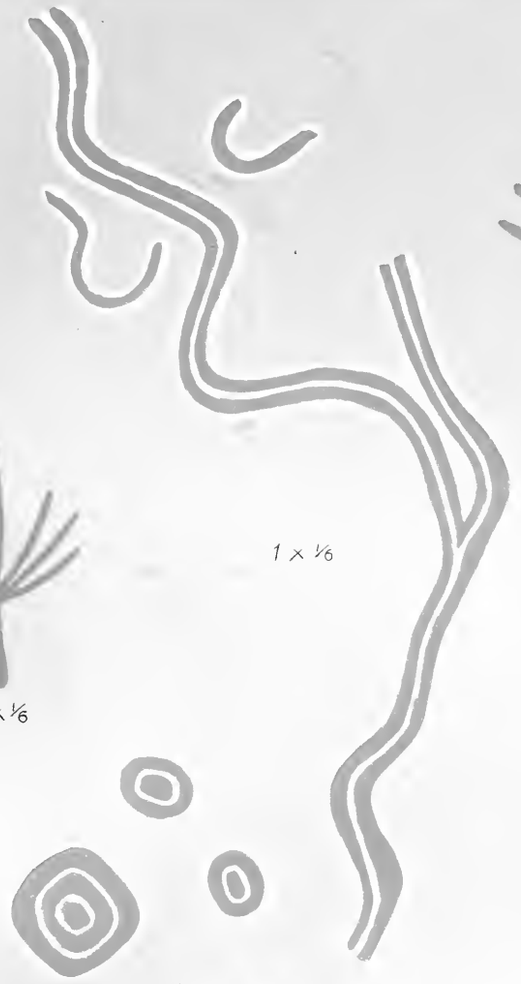

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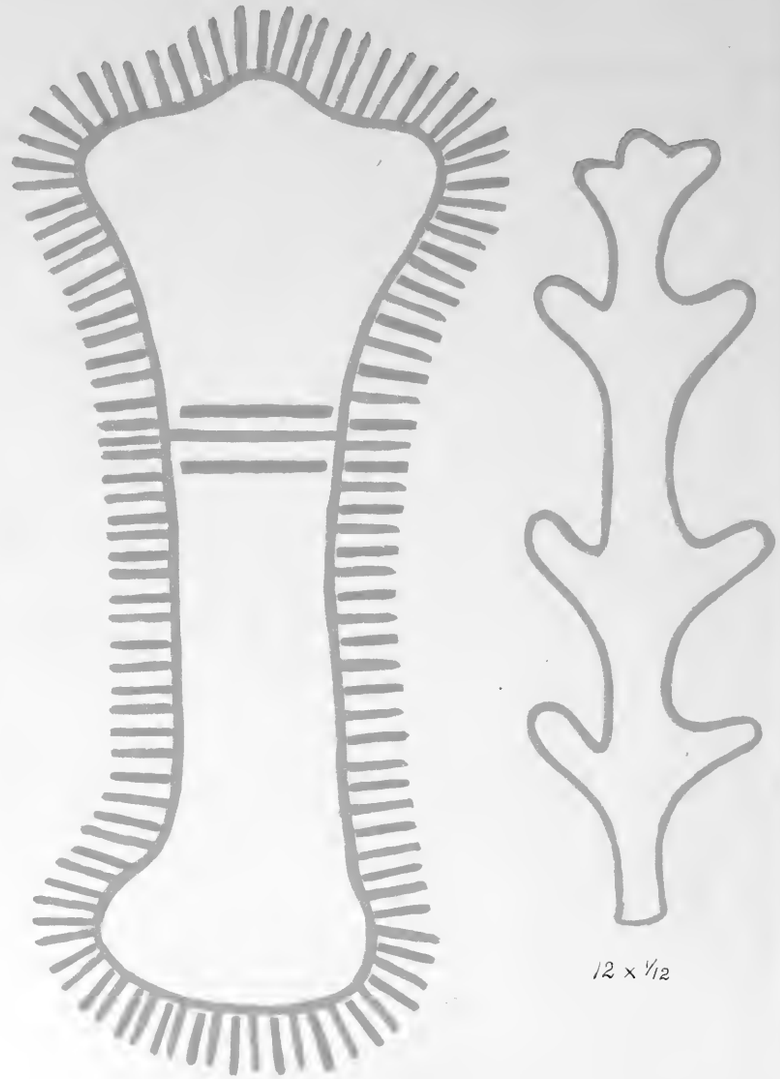

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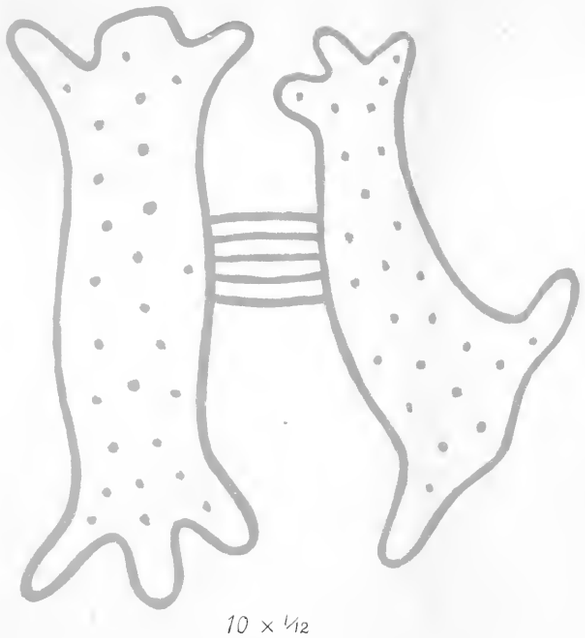

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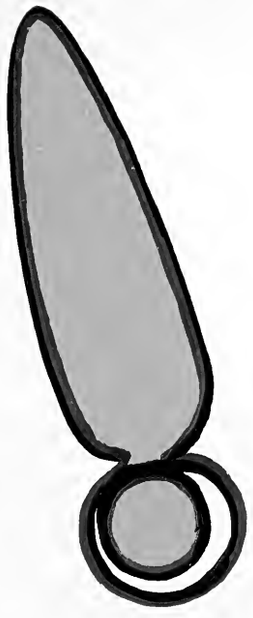

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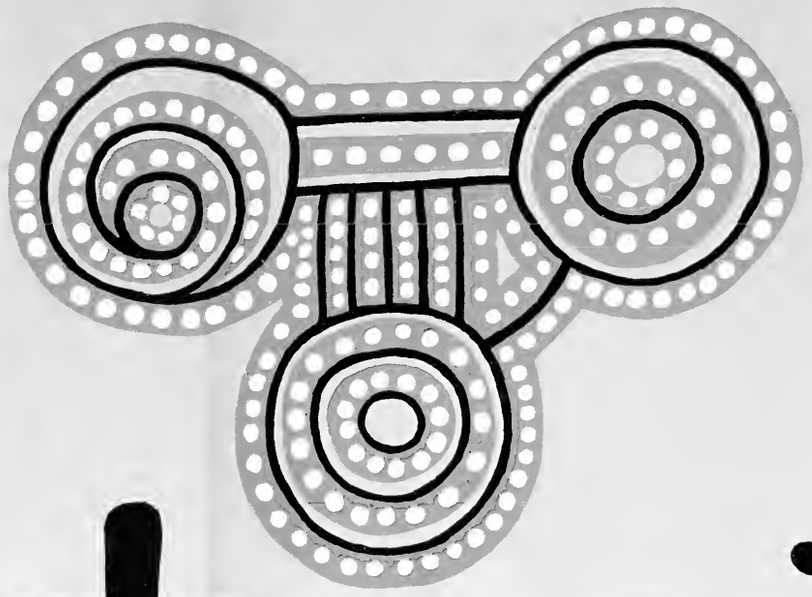

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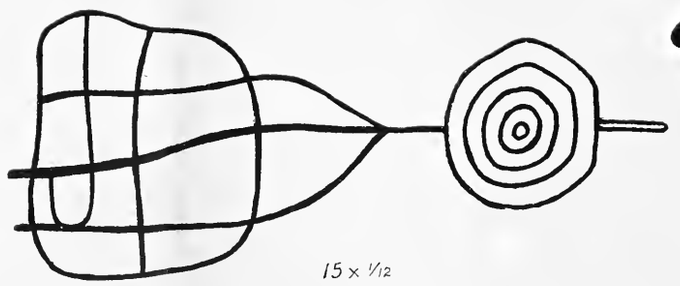

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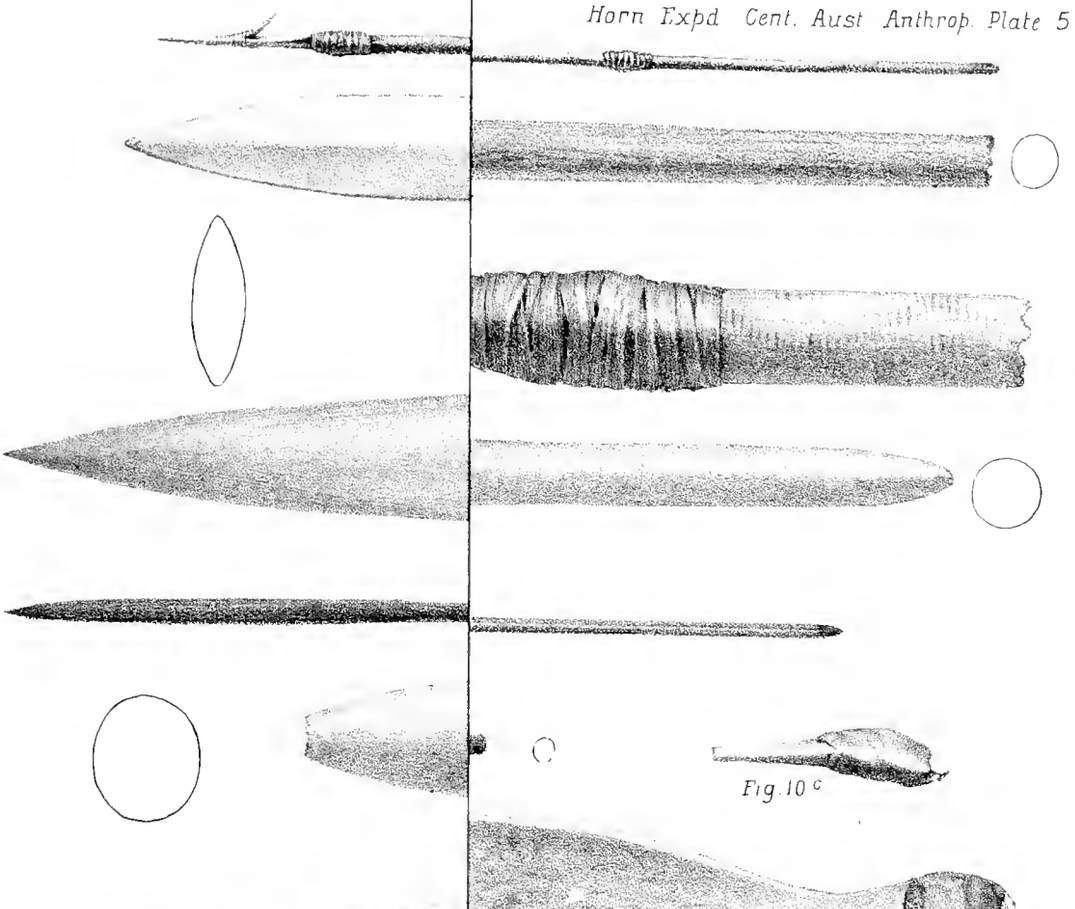

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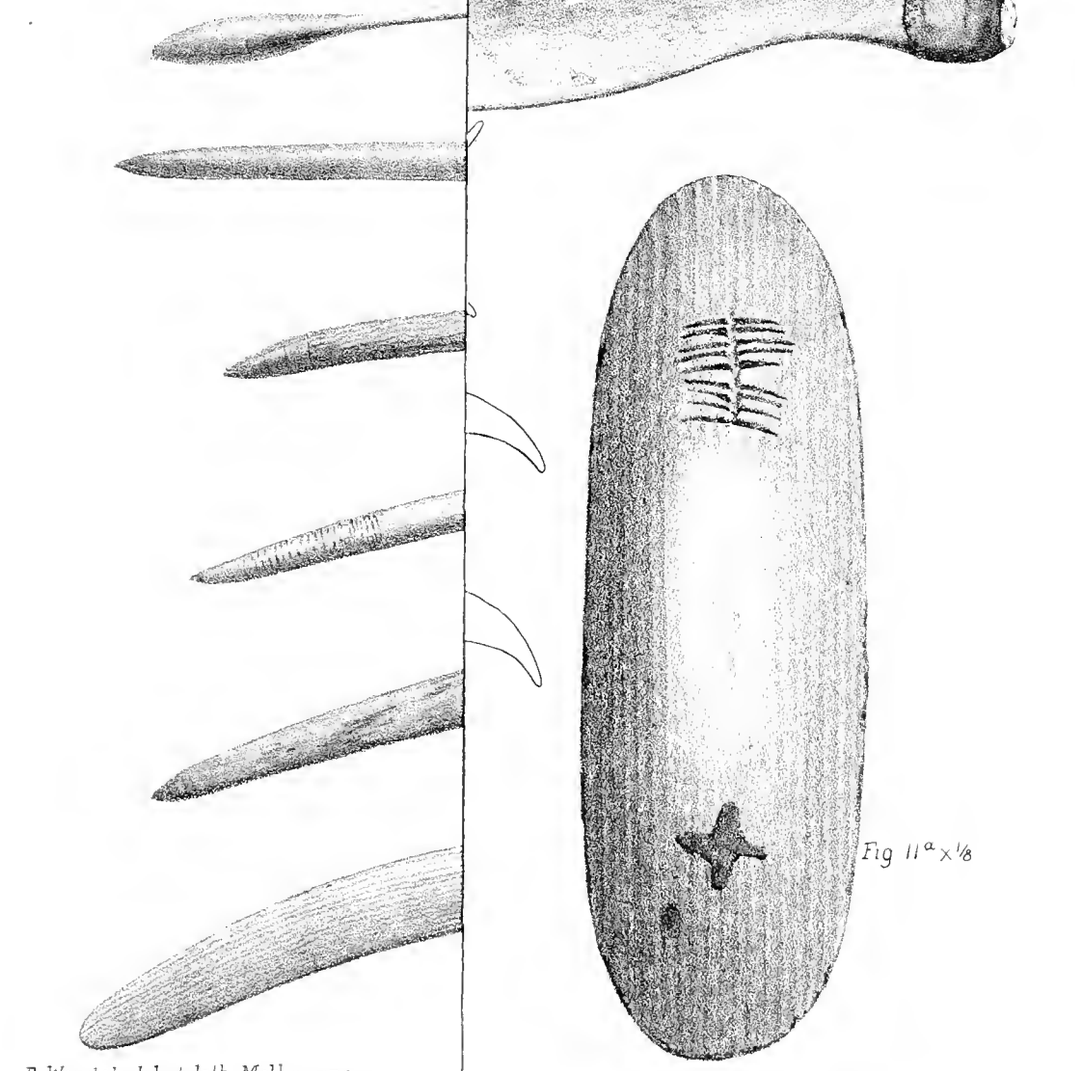

Fig 11 a x 1/8

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Fig 1 × 1/10

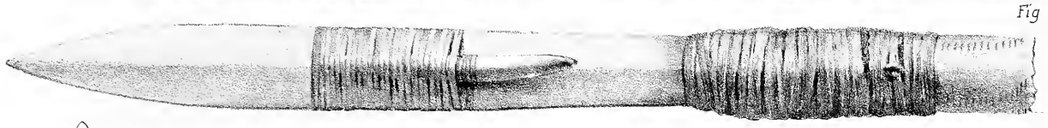

Fig. 1a × 1/2

Fig. 1a × 1/2

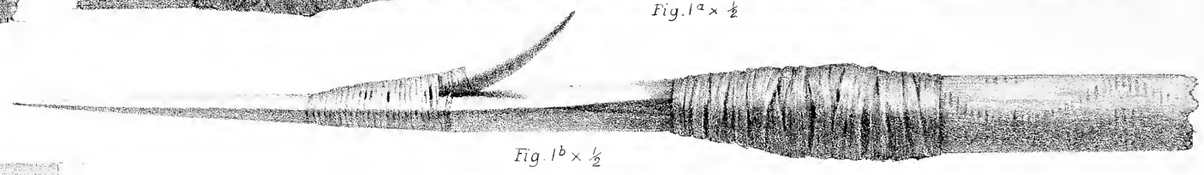

Fig. 1b × 1/2

Fig. 2a × 1/2

Fig 2a × 1/2

Fig. 2 × 1/10

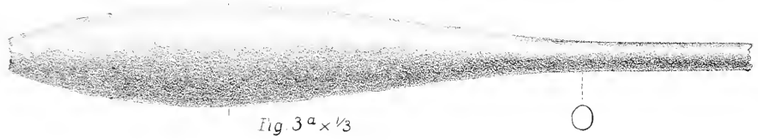

Fig 3a × 1/3

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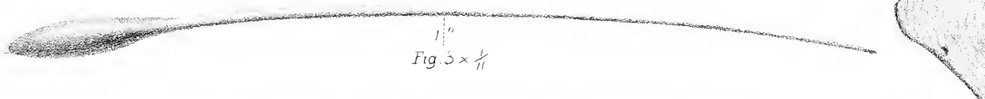

Fig. 3 × 1/11

Fig. 10a

Fig. 10 × 1/7

Fig 4 × 1/7

Fig. 10b

Fig. 5 × 1/7

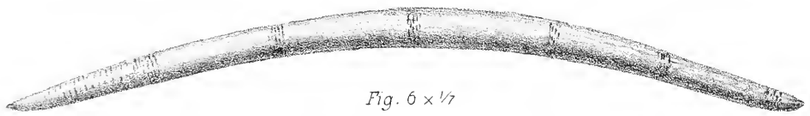

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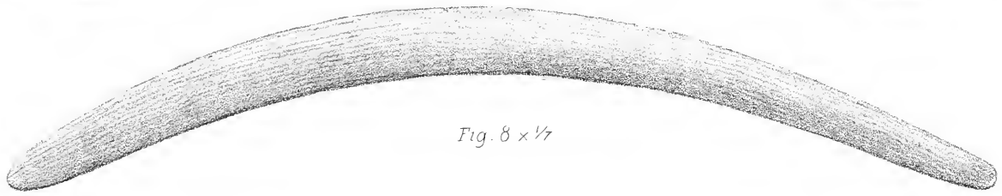
Fig. 7 × 1/7



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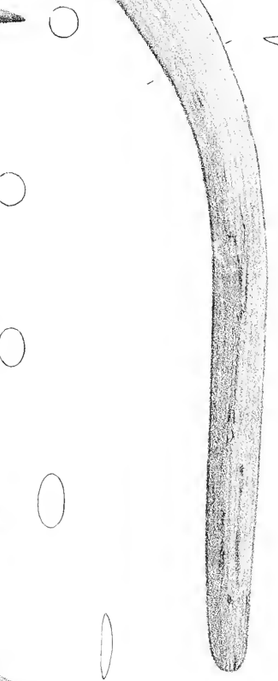

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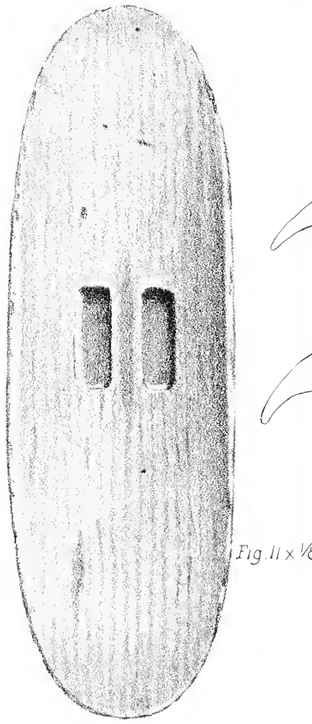

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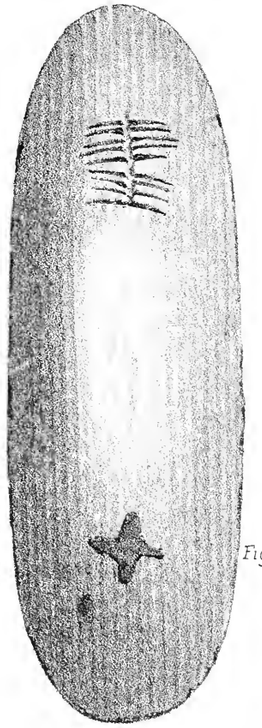

Fig. 11a × 1/8

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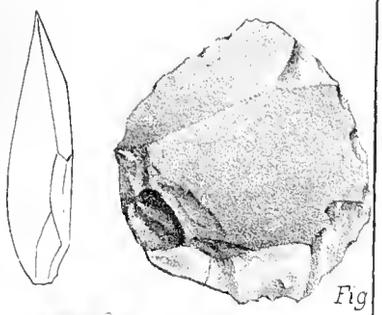


Fig

Fig. 12 × 1/5

× 1/3

Fig. 7 × 1/2

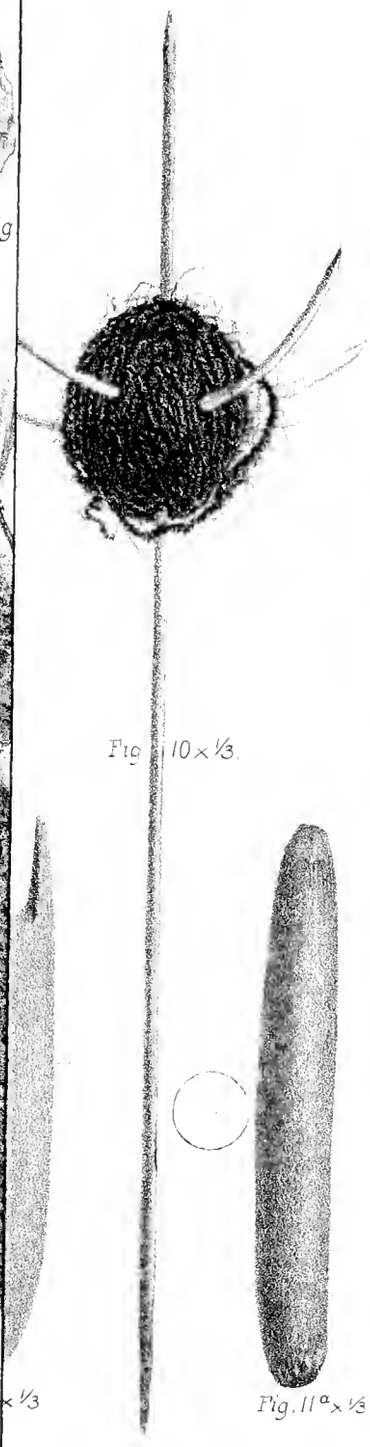


Fig 10 × 1/3.

Fig. 11a × 1/3

Fig 9 × 1/2

Fig 8 × 1/2

R. Wendel del et lith. Melbourn

Troedel & Co Print.

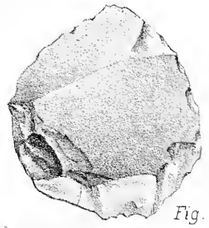


Fig. 13 × ½

Fig. 1 × ½

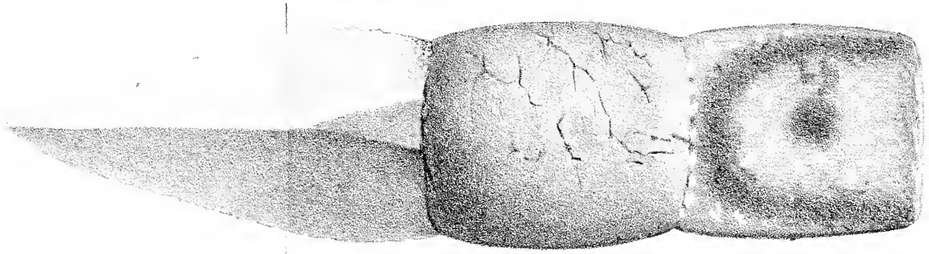


Fig. 1ª × ½

Fig. 5 × ⅓

Fig 5ª × 1

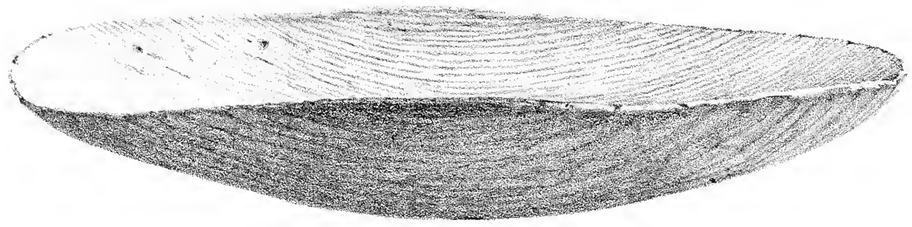


Fig. 2 × ¼

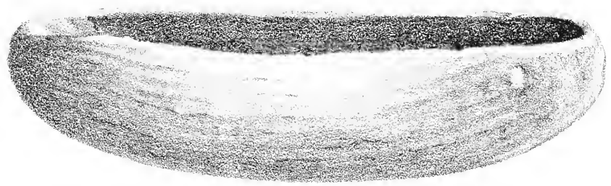


Fig. 3 × ¼

Fig. 7 × ½

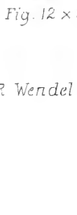


Fig. 12 × ⅕

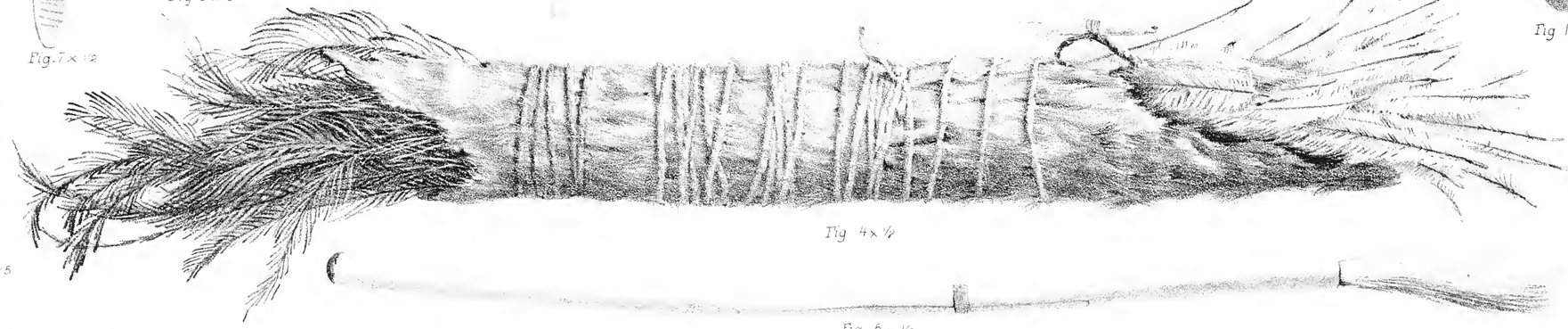


Fig 4 × ½

Fig. 6 × ½

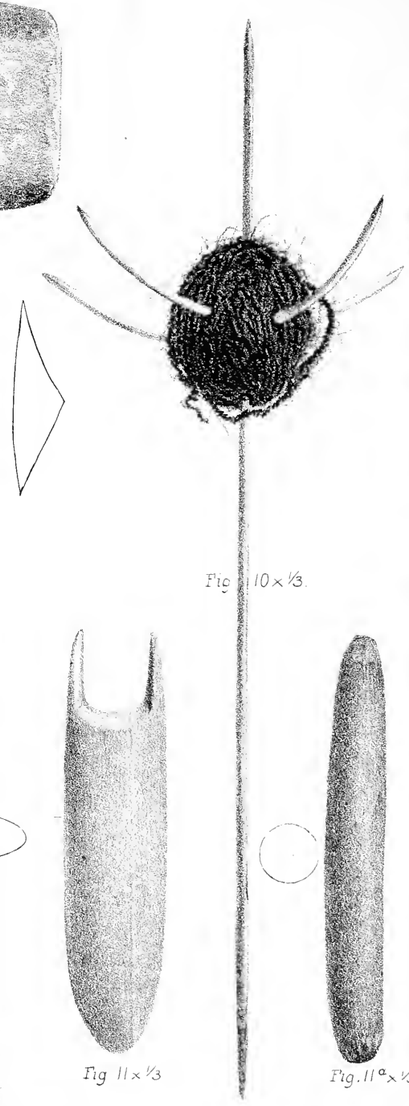


Fig 10 × ⅓

Fig 11 × ⅓

Fig. 11ª × ⅓

Fig 9 × ½

Fig 8 × ½

R. Wendel del et lith. Melbourne.

Troedel & Cº Print.

Fig 1 × 1/3

Fig 1a

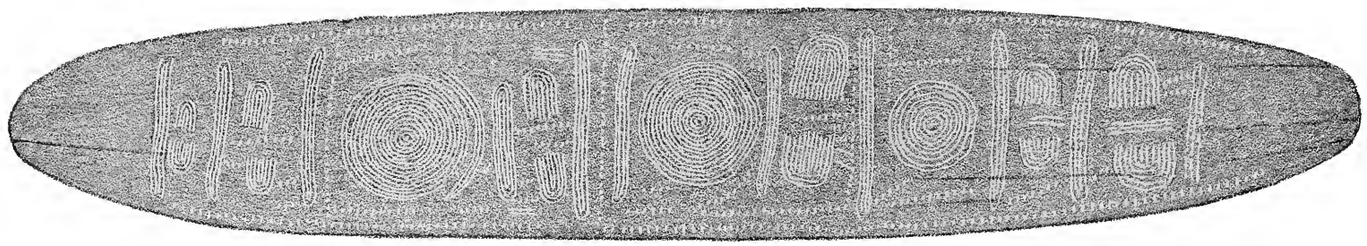


Fig. 2 × 1/3

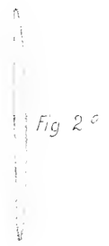


Fig 2a

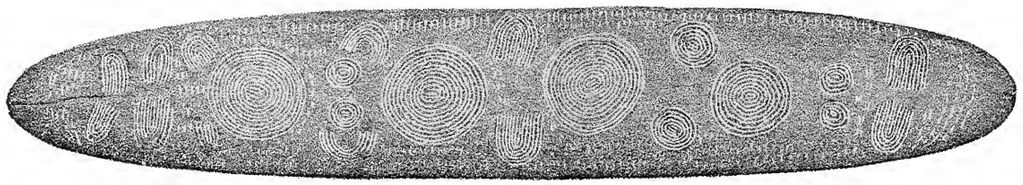


Fig 3 × 1/3

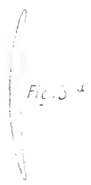


Fig 3a

Fig. 7 × 1/5

Fig 7a

Fig 9 × 1

Fig 9a

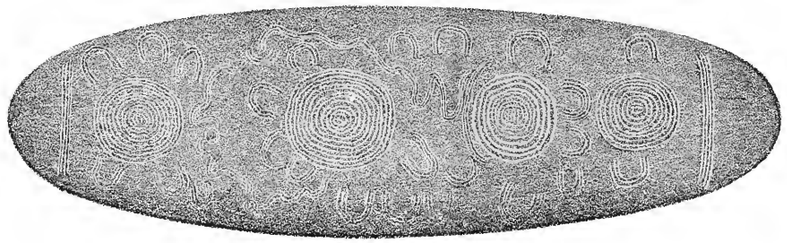


Fig 4 × 1/5

Fig 6a

Fig 4a

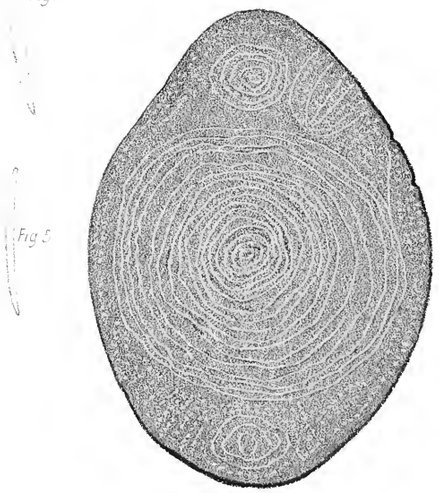


Fig 8 × 1/5

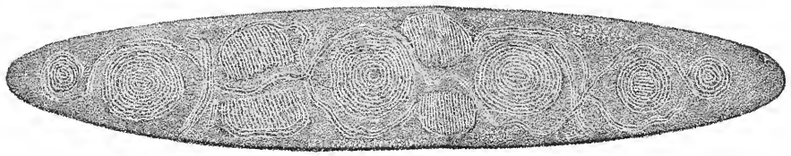


Fig 5 × 1/5

Fig 5

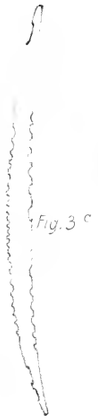


Fig 3c

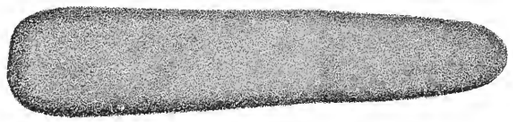


Fig 6 × 5

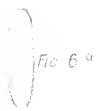


Fig 6a

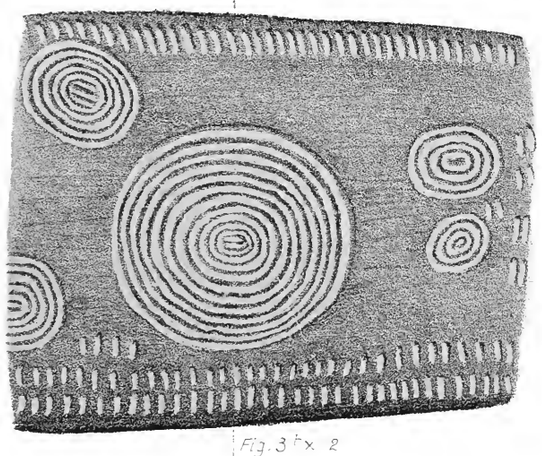


Fig. 3b × 2

R. Wendel del et lith. Melbourne.

Troedel & Co Print.

1

2

3

4

5

R. Wendel lith. Melb

Troedel & Co Print

PLATE 9.

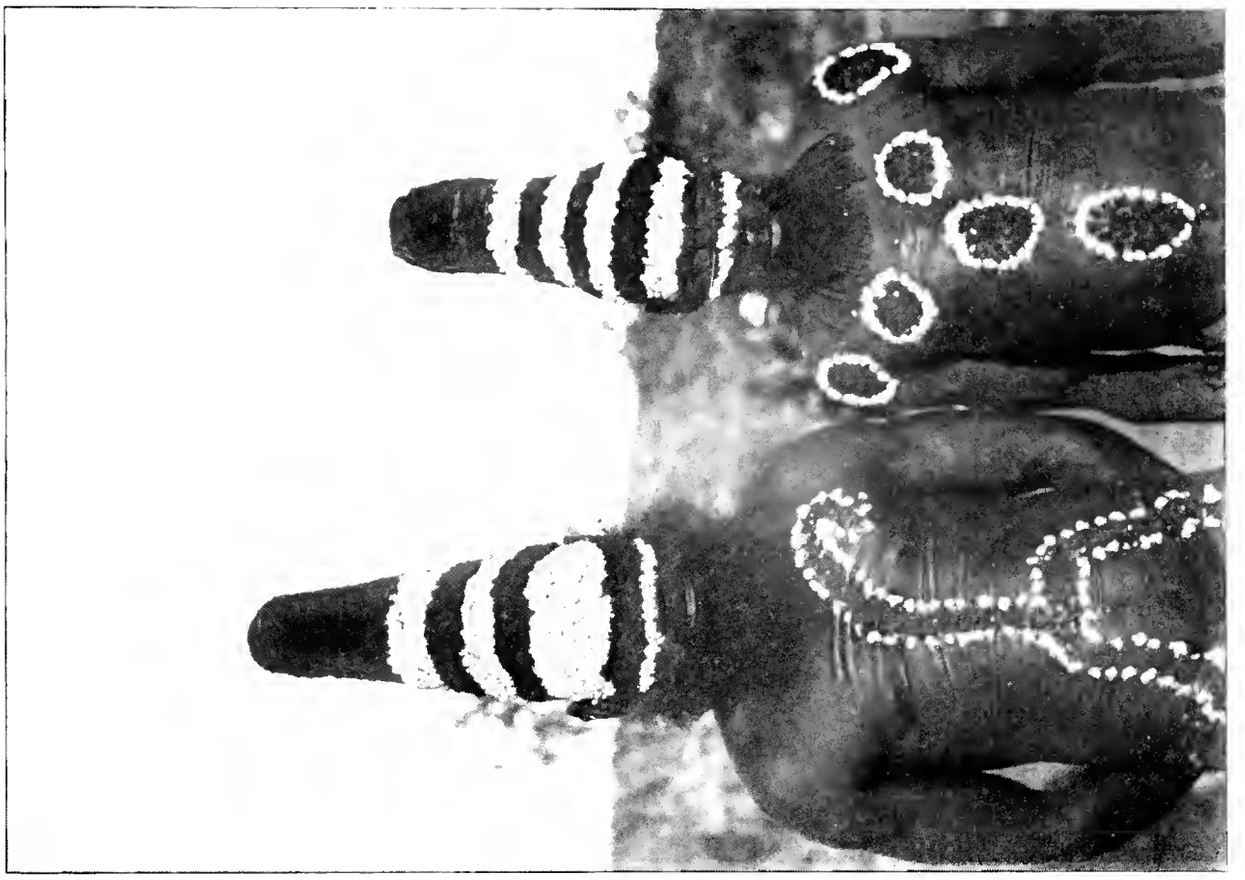
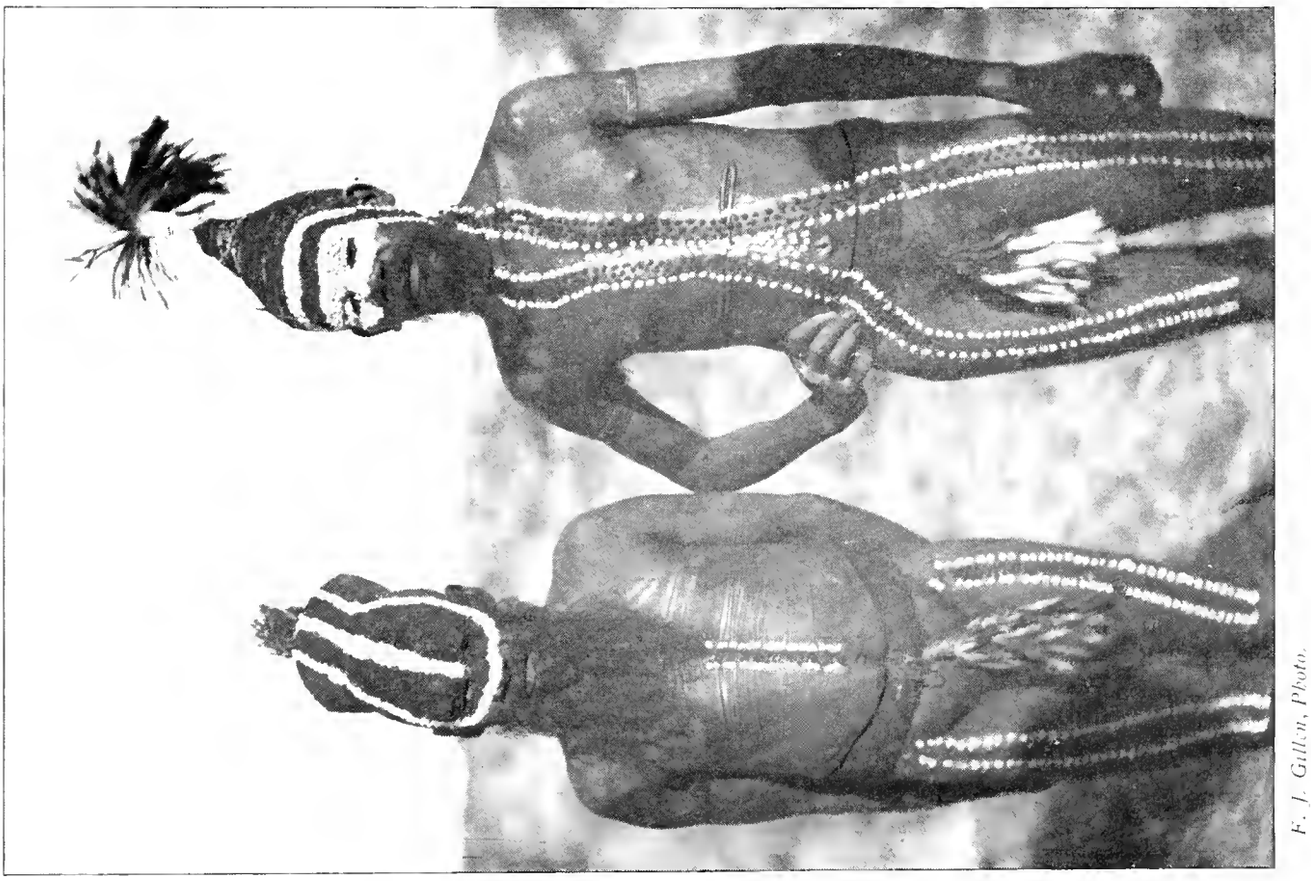


FIG. 2.



F. J. Gillon, Photo.

FIG. 1.

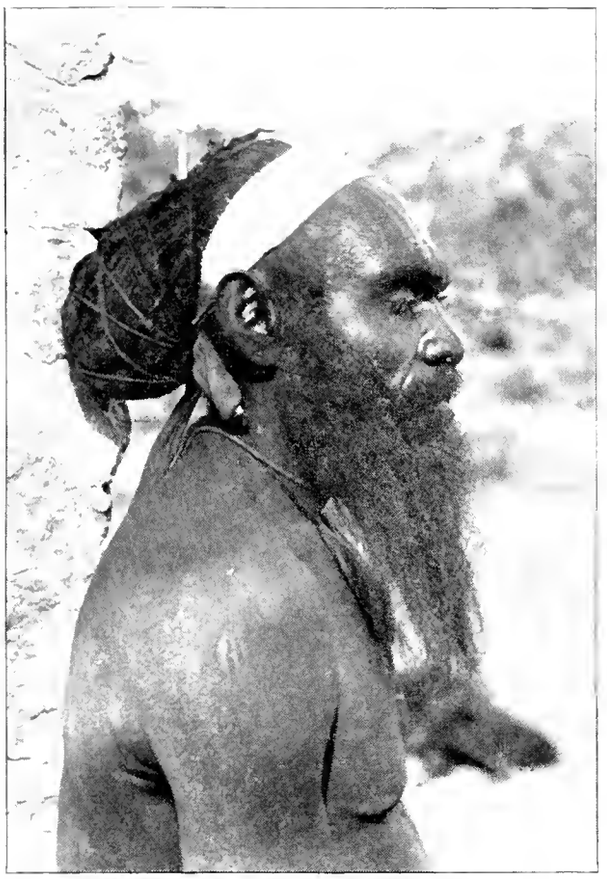


Fig 3.

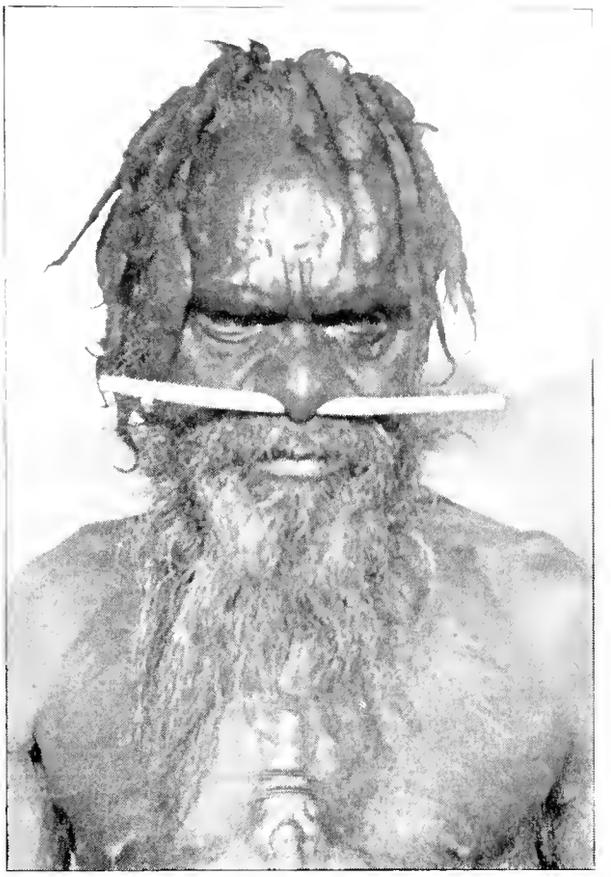
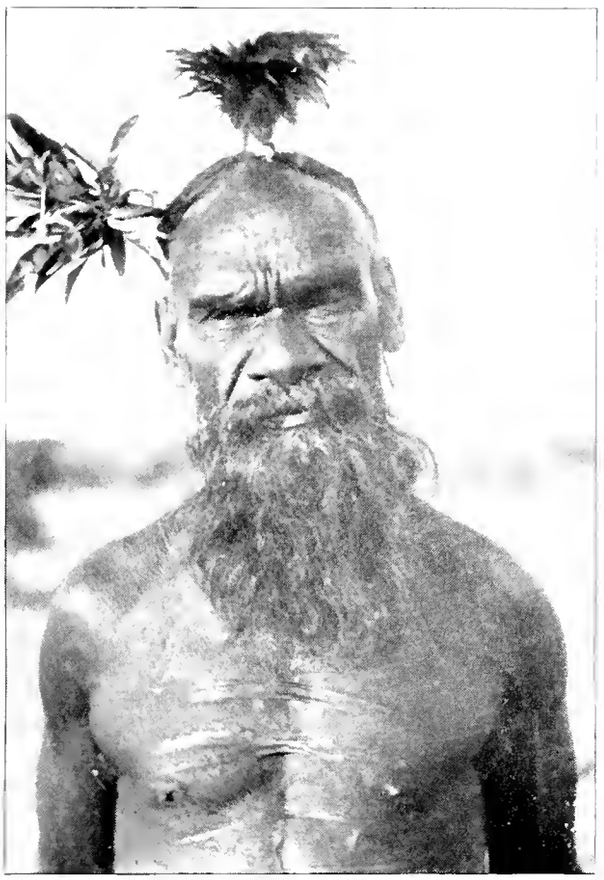


Fig. 4.



Gillen & Spencer, Photo.

Fig. 5.

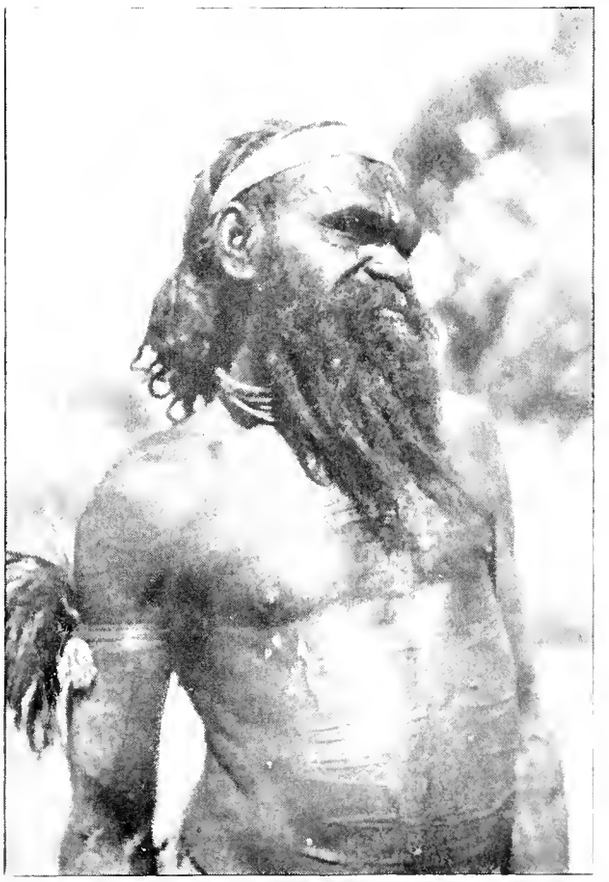


Fig. 6.

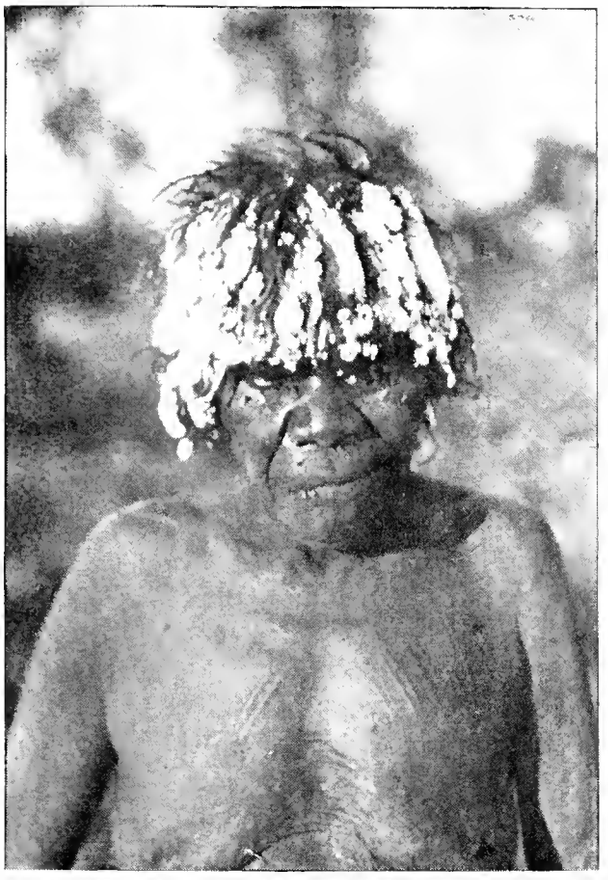
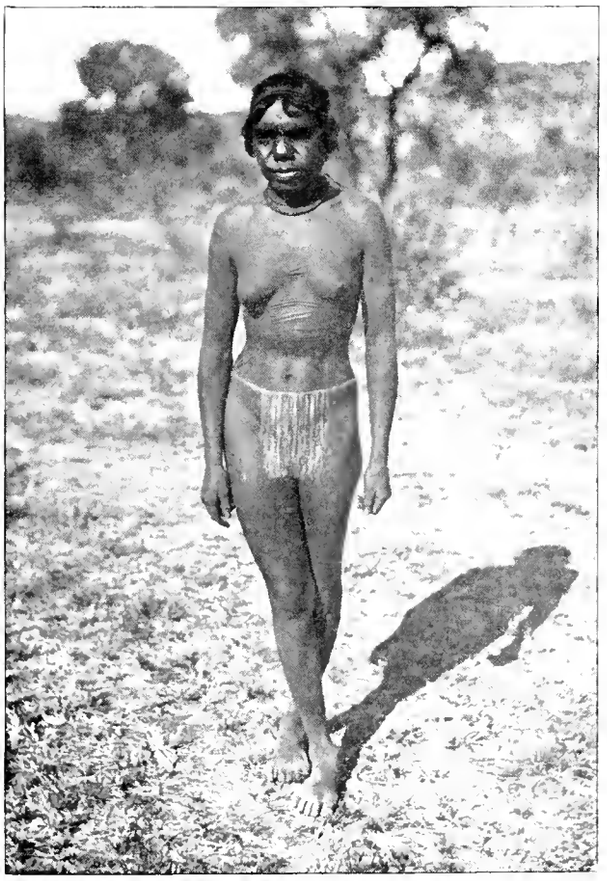


Fig. 7.

Fig. 8



F. J. Gillen, Photo.

Fig. 9.

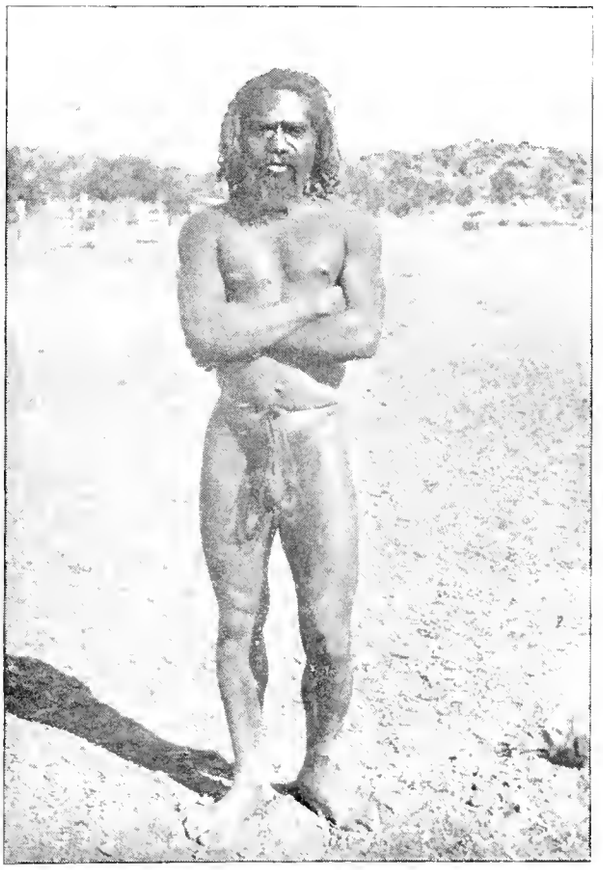


Fig. 10.

Fig. 11

F. J. Gillen, Photo.

Fig. 12.

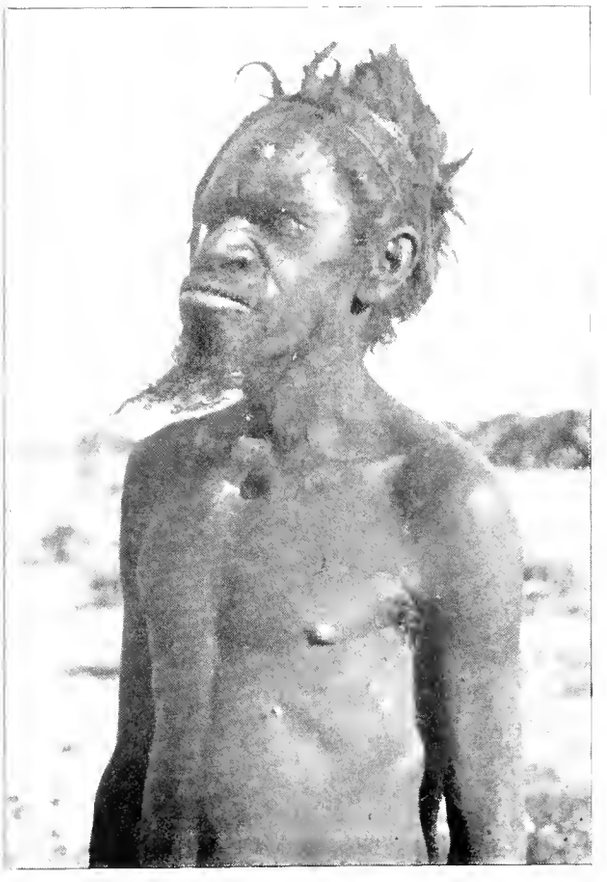


Fig. 13.

Fig. 14.

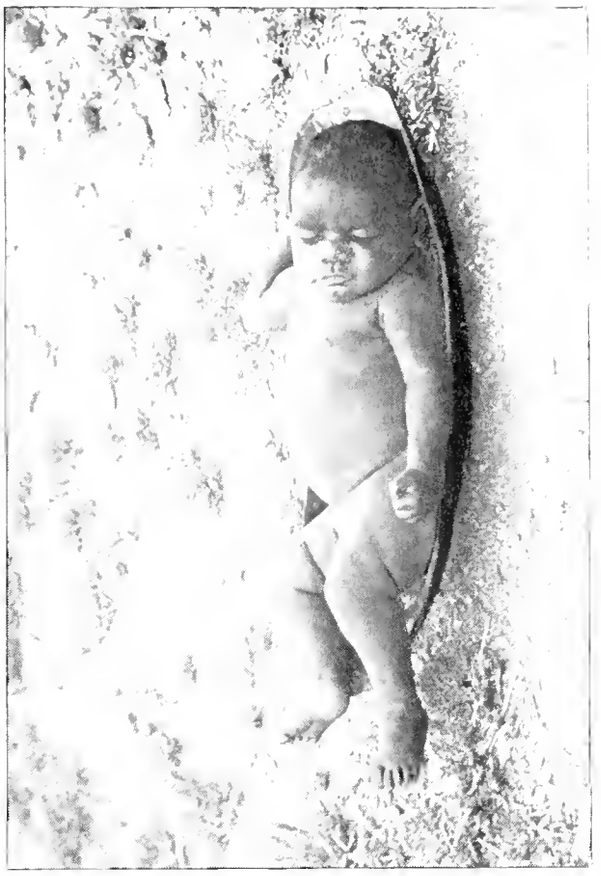
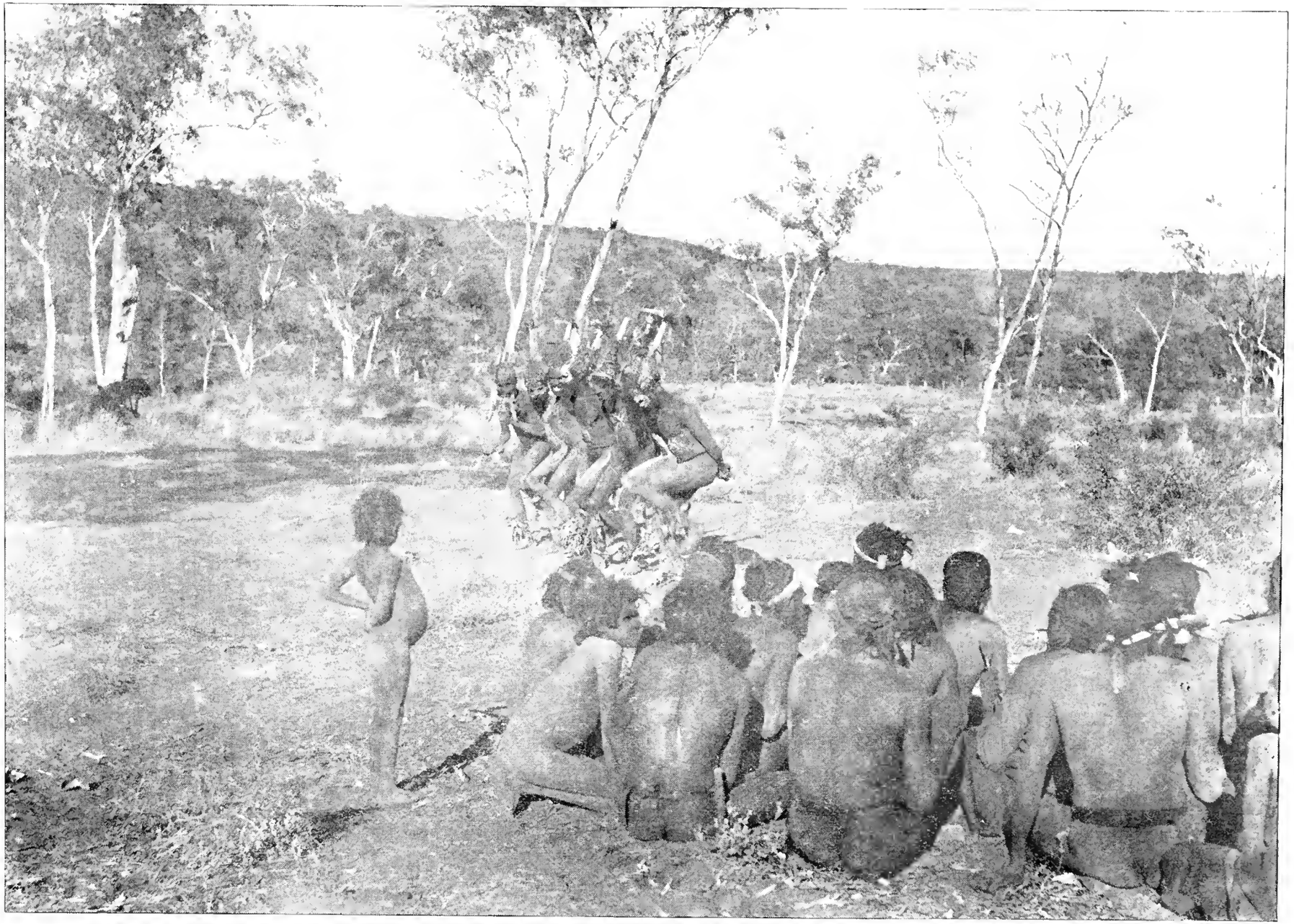


Fig. 15.

Fig. 16.



Spencer, Photo.

Fig. 17.

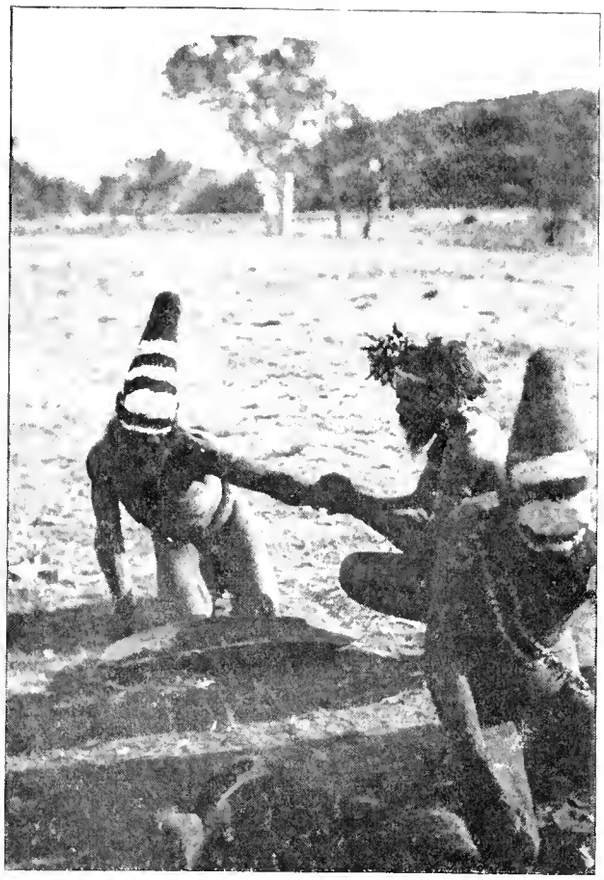
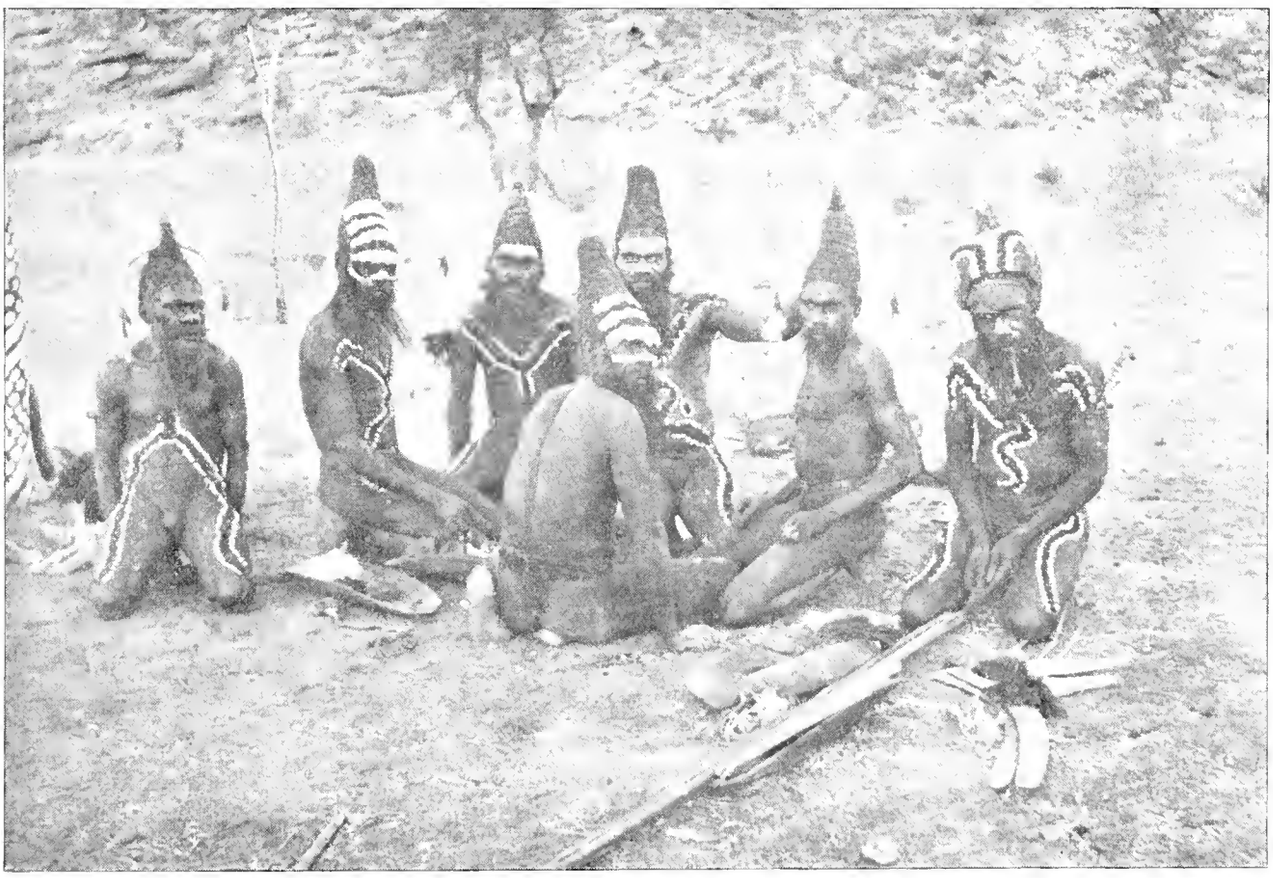


Fig. 18.

Fig. 19.



F. J. Gillen, Photo.

Fig. 20.

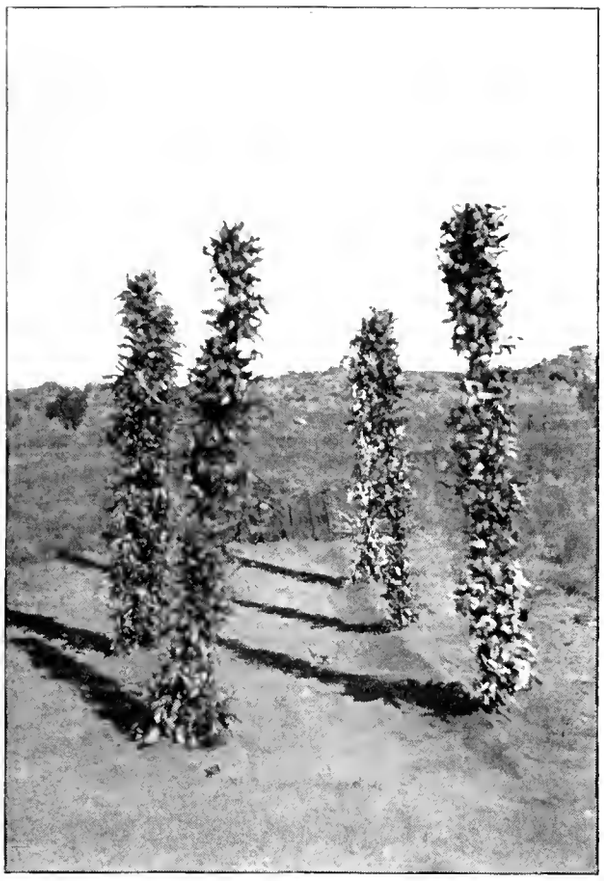
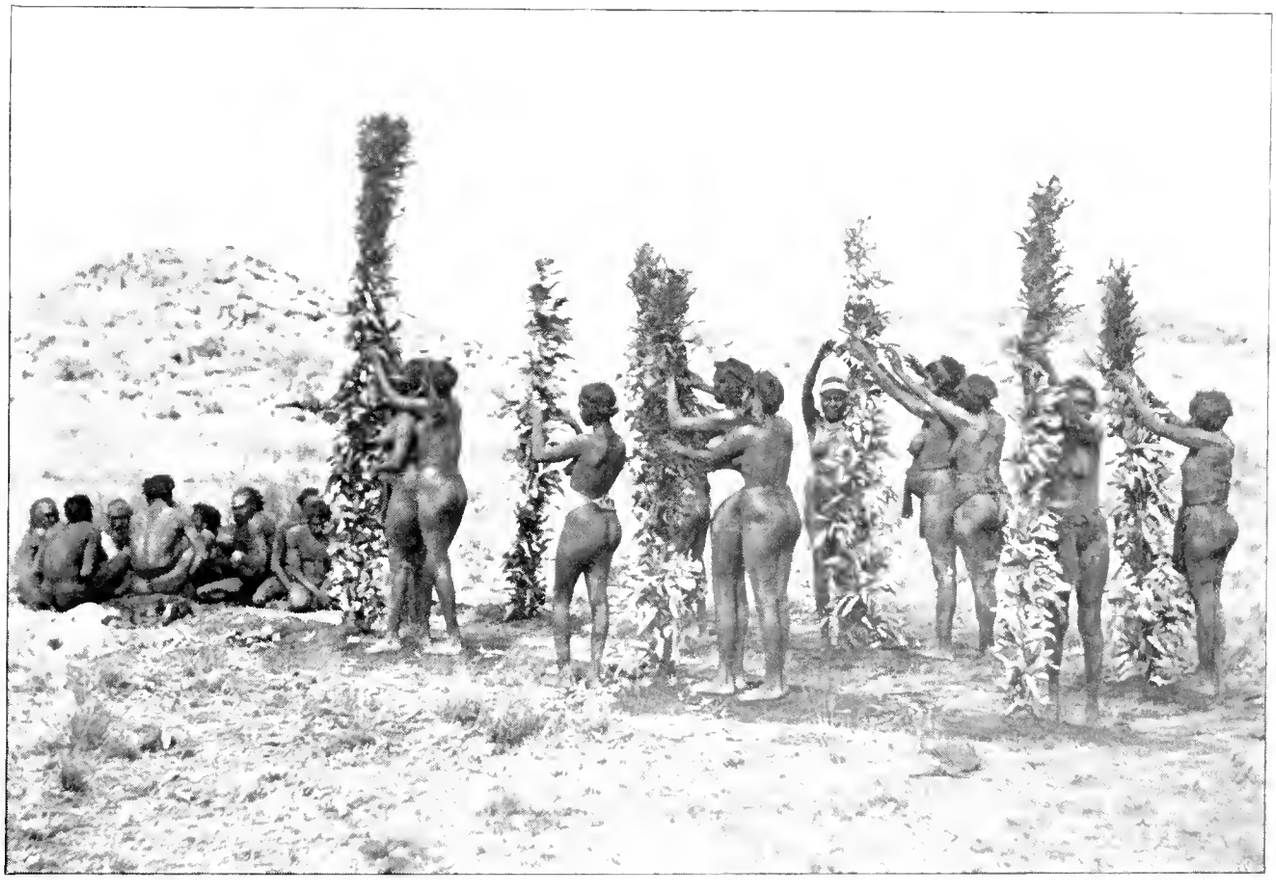


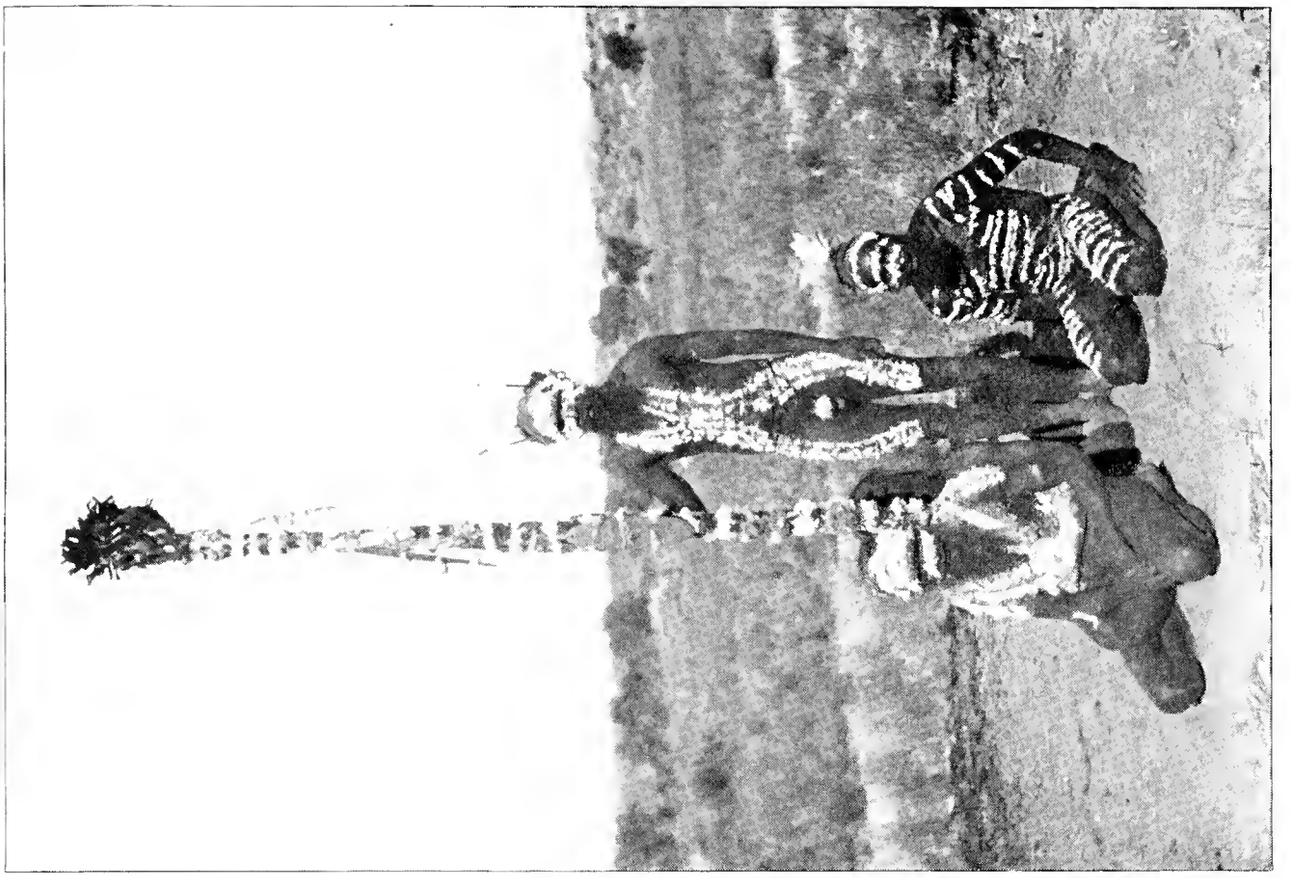
Fig. 21.

Fig. 22.



F. J. Gillen, Photo.

Fig. 23.



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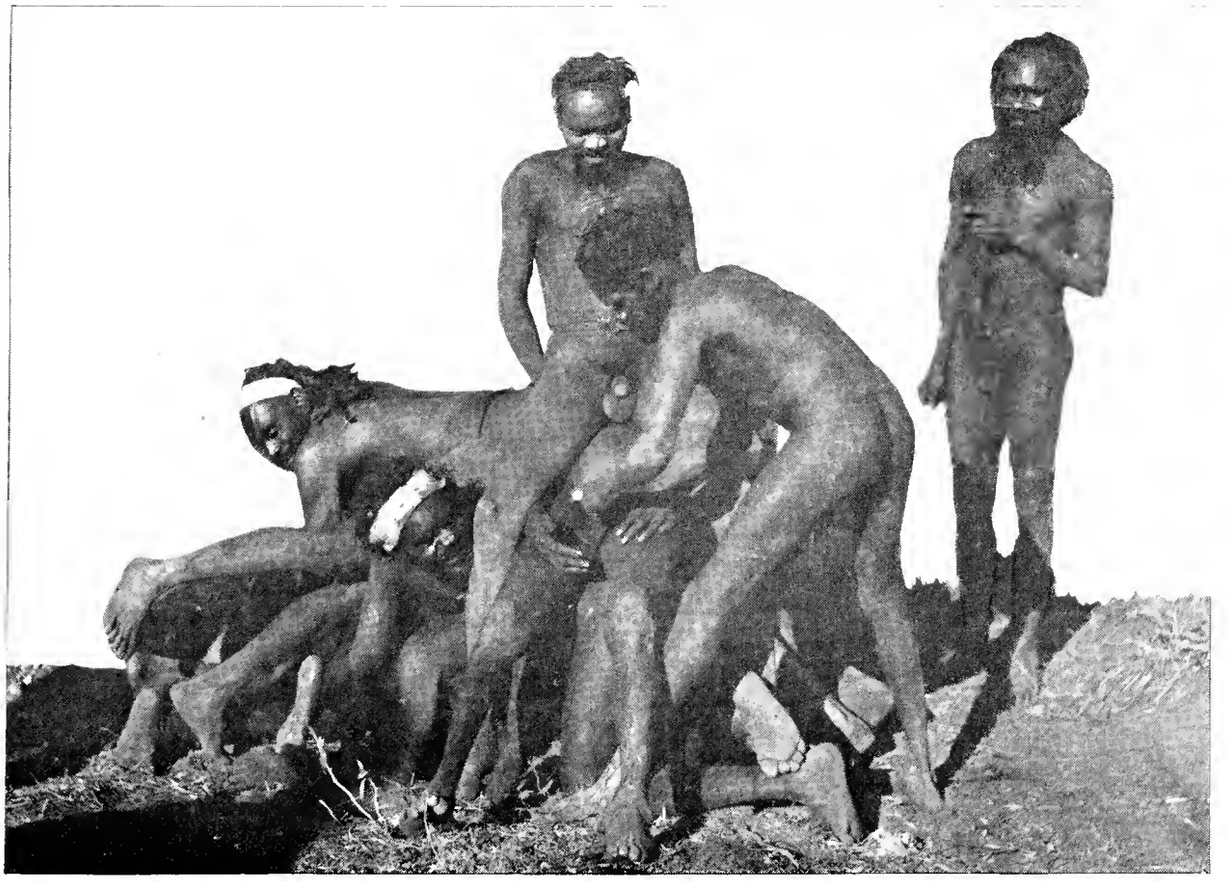


F. J. Gillen, Photo.

Fig. 24.

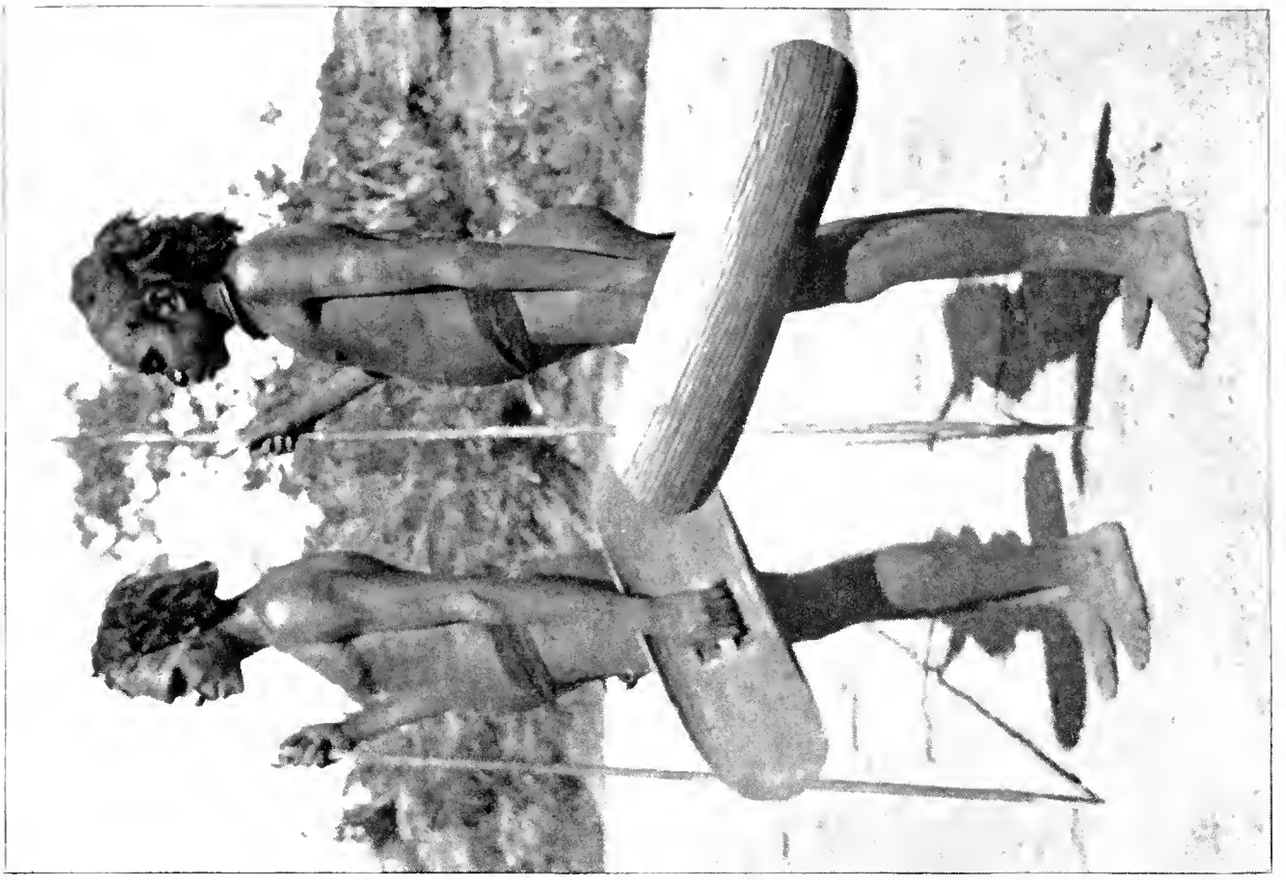
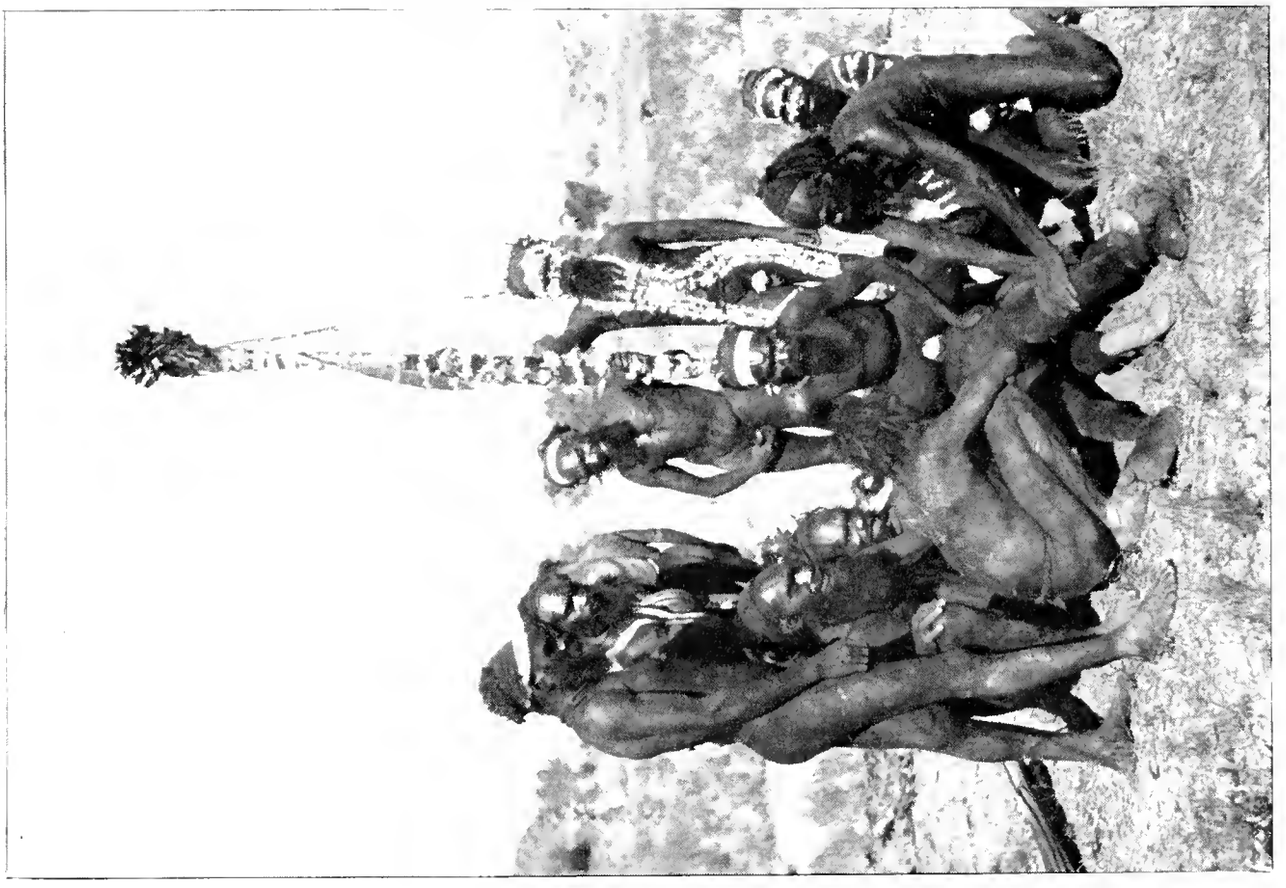


Fig. 27.



F. J. Gillon, Photo.

Fig. 26.

Fig. 28.

F. J. Gillen, Photo.

Fig. 29